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DOD TECHNOLOGY AND INDUSTRIAL BASE SYSTEMS

– *Evaluation of SOCRATES and DINET* –

April 1990

Contract MDA903-88-C-0208

Prepared for:

The Assistant Deputy Under Secretary of Defense
(Planning and Analysis)
Office of the Deputy Under Secretary of Defense
(Industrial and International Programs)

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	April 1990	Final

4. TITLE AND SUBTITLE

DOD TECHNOLOGY AND INDUSTRIAL BASE INFORMATION SYSTEMS
- Evaluation of SOCRATES and DINET -

5. FUNDING NUMBERS

MDA903-88-C-0208

6. AUTHOR(S)

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8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

The Assistant Deputy Under Secretary of Defense
(Planning and Analysis)
Office of Industrial and International Programs
Office of the Secretary of Defense

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

12b. DISTRIBUTION CODE

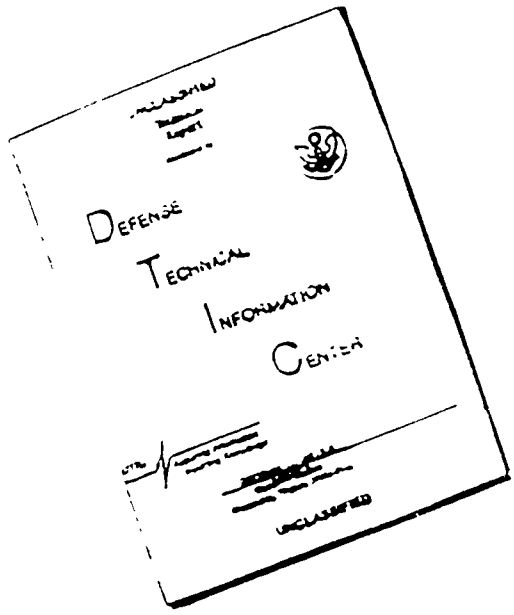
13. ABSTRACT *(Maximum 200 words)*

Since July 1988, when the Under Secretary of Defense (Acquisition) submitted his report entitled, Bolstering Defense Industrial Competitiveness, to the Secretary of Defense, two technology and industrial base information systems, **Project SOCRATES** and the **Defense Industrial Network (DINET)**, have had increased visibility tc those assessing U.S. technology and industrial base. These systems have been projected as the basis for an institutional mechanism that provides to the principal officers of DOD an analytical capability to develop defense perspectives. SOCRATES provides decisionmakers with unbiased foreign capability assessments for specific technologies to assist in formulating U.S. technological and industrial research, development, procurement, and trade policies. DINET supports the planner in assessing the manufacturers' ability to meet priority DOD program requirements by providing improved visibility into the U.S. industrial base for critical weapon system components and subcomponents. This study evaluates the two systems and makes recommendations for a way ahead.

14. SUBJECT TERMS	15. NUMBER OF PAGES
SOCRATES, DINET, Defense Industrial Network, Technology Outline, Technology Assessment, Industrial Base, Information Systems	137
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ASSTRACT
Unclassified	Unclassified	Unclassified	UL

DISCLAIMER NOTICE



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DOD TECHNOLOGY AND INDUSTRIAL BASE SYSTEMS

– Evaluation of SOCRATES and DINET –

April 1990

Robert M. Nakamura, Task Leader

STATEMENT "A" per Paul Hopler
OUSDA-IP, The Pentagon
Washington, DC 20301
TELECON 5/8/90 VG

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PREFACE

Since July 1988, when the Under Secretary of Defense (Acquisition) submitted his report entitled, Bolstering Defense Industrial Competitiveness, to the Secretary of Defense, two DOD information systems, **Project SOCRATES** and the **Defense Industrial Network (DINET)**, have had increased visibility to those assessing United States technology and industrial base. These systems have been discussed within the Defense Department and by Congressional subcommittees. They have been projected as the basis for an institutional mechanism that provides analytical capability to the principal officers and staff planners of the Department of Defense. This study compares and evaluates the two systems and presents recommendations for a way ahead.

DISCLAIMER STATEMENT

The views, opinions and findings contained in this report are those of the author's and should not be construed as an official Department of Defense position, policy, or decision, unless so designated by other official documentation.

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EXECUTIVE SUMMARY

EVALUATION OF SOCRATES AND DINET

PURPOSE OF THIS STUDY: The purpose of this study is to review two existing Department of Defense (DOD) technology and industrial base information systems, Project SOCRATES and the Defense Industrial Network (DINET), and to describe their basic system parameters, compare and evaluate their expected results and uses, present their current developmental/operational status, and present recommendations to assist in improving their programs. (See Figure 1, DOD Information Systems.)

SOCRATES	-	**A FOREIGN TECHNOLOGY CAPABILITY ASSESSMENT SYSTEM**
DINET	-	**A PRODUCT-SPECIFIC INDUSTRIAL BASE CAPABILITY ASSESSMENT SYSTEM**

Figure 1. DOD Information Systems.

BACKGROUND LEADING TO THE STUDY: In a report to the Secretary of Defense, Bolstering Defense Industrial Competitiveness (July 1988), the Under Secretary of Defense (Acquisition) considered "... options to ensure a strong industrial base that will enable the (United States) to react appropriately and successfully to any threat" and also discussed the establishment of an analytical measures to assess domestic and global industrial capabilities. In his words:

> The research for this report has provided a baseline for establishing means to evaluate criteria to define and prioritize the criticality of domestic products or capabilities. In assessing industrial base capability, traditional as well as global industrial resources available to Department of Defense must be explored. Rather than create new data bases, the Department will develop the means quickly to access available data. Two

existing Department of Defense initiatives in this field are the Defense Industrial Network (DINET) and Project SOCRATES. DINET monitors the capabilities of subtier and basic industries essential to defense production, drawing upon a large number of existing data bases. Project SOCRATES examines technology availability on a global basis. An evaluation is underway to consider the feasibility of consolidating both systems, combining their domestic industrial and global technology information into one comprehensive system. The Department also is exploring the possibility of utilizing the U.S. Census Bureau as a primary data collection source. These initiatives will minimize duplication, foster consistency, and provide currently unavailable essential data for comprehensive defense industrial analysis.

The House conference report authorizing DOD appropriations for fiscal year 1990 stated that "the conferees agree that the two existing DOD programs, the Defense Industrial Network (DINET) and the Defense Intelligence Agency's Project SOCRATES, should be consolidated with the Defense Industrial Base Office to support research, development and acquisition activities of the Under Secretary of Defense for Acquisition. The conferees direct that funding for consolidation and implementation of defense industrial information activities be taken from funds appropriated to the Department of Defense in support of the Under Secretary of Defense for Acquisition."

CONCLUSIONS FROM EVALUATION OF SOCRATES AND DINET

SOCRATES and DINET are useful and complementary systems. They have been developed to meet different requirements relative to technology and industrial base programs. SOCRATES focuses on foreign technological capabilities and compares them to U.S. capabilities down to the sub-system level. DINET emphasizes cataloging U.S. and Canadian industrial base and technology development capabilities. Together, they cover most of the needs of the ODUSD (I&IP) staff and other Government users.

The greatest weakness of both projects is primarily a matter of direction, organization, and resources rather than a question of overlapping missions, functions, or databases. SOCRATES and DINET have been developed with a minimum of resources over the past few years and are now on the threshold of maturity.

A consolidated DOD Technology and Industrial Base Information Systems Program should be established to more effectively serve the user communities and to more efficiently use the limited resources allocated for the development and operations of both systems. This should lead to an organization led by a single Chief of DOD Technology and Industrial Base Information Systems, supported by a consolidated staff. He would focus existing and future projects

through a distinct service organization, and would be responsible for effective planning, programming, and budgeting of resources with the goal of controlling growth in the directions of greater accuracy, greater comprehensiveness, and greater responsiveness to user needs.

The DOD Technology and Industrial Base Information Systems, explicitly including but not limited to SOCRATES and DINET, should be institutionalized as a program through a formal charter such as a DOD Directive. This DOD Directive would specify organizational missions, objectives, functions and responsibilities, as well as the responsibilities of other DoD agencies and the Services to provide appropriate data and resource support in accordance with existing Congressional and OSD guidance.

A formal management plan should then be developed to provide direction to the program, to define and coordinate responsibilities, and to outline development and configuration maintenance procedures. It is also needed as a basis for developing a DOD Technology and Industrial Base Information Program mission element needs statement (MENS) to be used to establish program funding.

Action is needed to increase awareness of SOCRATES and DINET products to Government decision-makers and staff planners both within and outside DOD. As an initial step, the consolidated DOD Technology and Industrial Base Information Program organization should be relocated into the Pentagon to permit immediate accessibility for OSD staff officers. This would facilitate "walk-in" service for primary users and permit more routine communications with and assistance to the OSD staff.

The SOCRATES and DINET systems (and other systems that may eventually be included) need to be better documented with functional descriptions, system specifications, data element dictionaries, and operators and users guides. This will provide the basis for more streamlined user access to the systems, and more effective configuration management of the systems.

A staff guide to the DOD Technology and Industrial Base Information Systems needs to be developed as a ready reference for OSD staff officers and other authorized users. It should incorporate information describing the organization, the systems supported and their capabilities, and various on-line and off-line methods for accessing information about the SOCRATES and DINET systems. This document could be in the form of a DOD Manual made available throughout DOD and to other Government users.

The users of the SOCRATES and DINET systems must be encouraged to validate the system requirements and data requirements. Every effort must be made to test the responsiveness of the DOD Technology and Industrial Base Information Systems to dynamic, contingency-driven requirements by participating in joint staff exercises, budget cycle support, and preparation of Congressional

testimony. This will lead to a more responsive and more widely appreciated system.

User groups must be created to ensure that valid data product requirements are being communicated to the program management staff, and that resource and data input requirements are reaching appropriate users. A separate user group could be established for each system. Joint and combined data production groups are also required. These groups would have to meet with frequency that make communications between the project office and the staff user reliable and routine. The minimum number of meetings by such groups should be twice per year to ensure consistent participation.

An orientation and training plan for the DOD Technology and Industrial Base Information Systems must be developed that outlines orientation courses for Service staff officer level schools and colleges, staff officer orientation training, and detailed training for specific user communities.

RECOMMENDATIONS FOR A WAY AHEAD

The following paragraphs present recommendations that the SOCRATES and DINET organizations may wish to consider when the offices are consolidated. (See Figure 1, Recommended Actions.) These recommendations are based on assumption of zero combined budget growth for an DOD Technology and Industrial Base Information Systems office compared to its predecessor project offices. Such financial constraints increase the importance of a more coordinated and focused approach for information system management than has been the case in the past. Even with improved management, resource constraints may continue to limit the extent to which the systems can be further developed.

- Develop a consolidated organizational structure and create a Office of DOD Technology and Industrial Base Information Systems using existing SOCRATES and DINET resources.

- Create a position of "Chief, DOD Technology and Industrial Base Information Systems," out of existing SOCRATES/DINET resources.

- Develop a DOD Directive on the DOD Technology and Industrial Base Information Program that will:

  - Establish a consolidated mission,

  - Identify internal functions and responsibilities, and

  - Identify user and upper echelon functions and responsibilities.

- Move the DOD Office of Technology and Industrial Base Information Systems into the Pentagon for improved visibility and staff access.

- Develop a DOD staff guide (DOD Manual) to the DOD Technology and Industrial Base Information Systems.

- Develop a formal comprehensive program management plan to provide direction, to defined and coordinate responsibilities, and to outline development and configuration management procedures.

- Develop a Mission Element Needs Statement (MENS) for the DOD Technology and Industrial Base Information Program and establish a funding base for the consolidated program.

- Validate OSD, joint, combined and inter-government agencies requirements for SOCRATES and DINET.

- Create local user groups that meet at a minimum of twice each year to establish requirements and communications with the user communities.

- Create a joint/inter-government agencies data production working group that meets twice each year to develop to a develop data exchange program.

- Create a combined data production working group with Canada or use the NADIBO Data Committee will fulfill this need.

- Develop system documentation to ensure orderly configuration management of each system - perhaps a modified version of the documentation described in the Mil-Standard.

- Consolidate automation support in order to optimize the expenditure for resources.

- Establish a training programs to:

  - Present an regularly scheduled orientation of the systems to newly assigned OSD executive and staff-level officers,

  - Present an orientation of the system to students at Service schools and staff/war colleges (especially, ICAF), and

  - Present a detailed hands-on course to staff users.

- Use the systems in major joint exercises, program justification development, and to respond to Congressional inquiries.

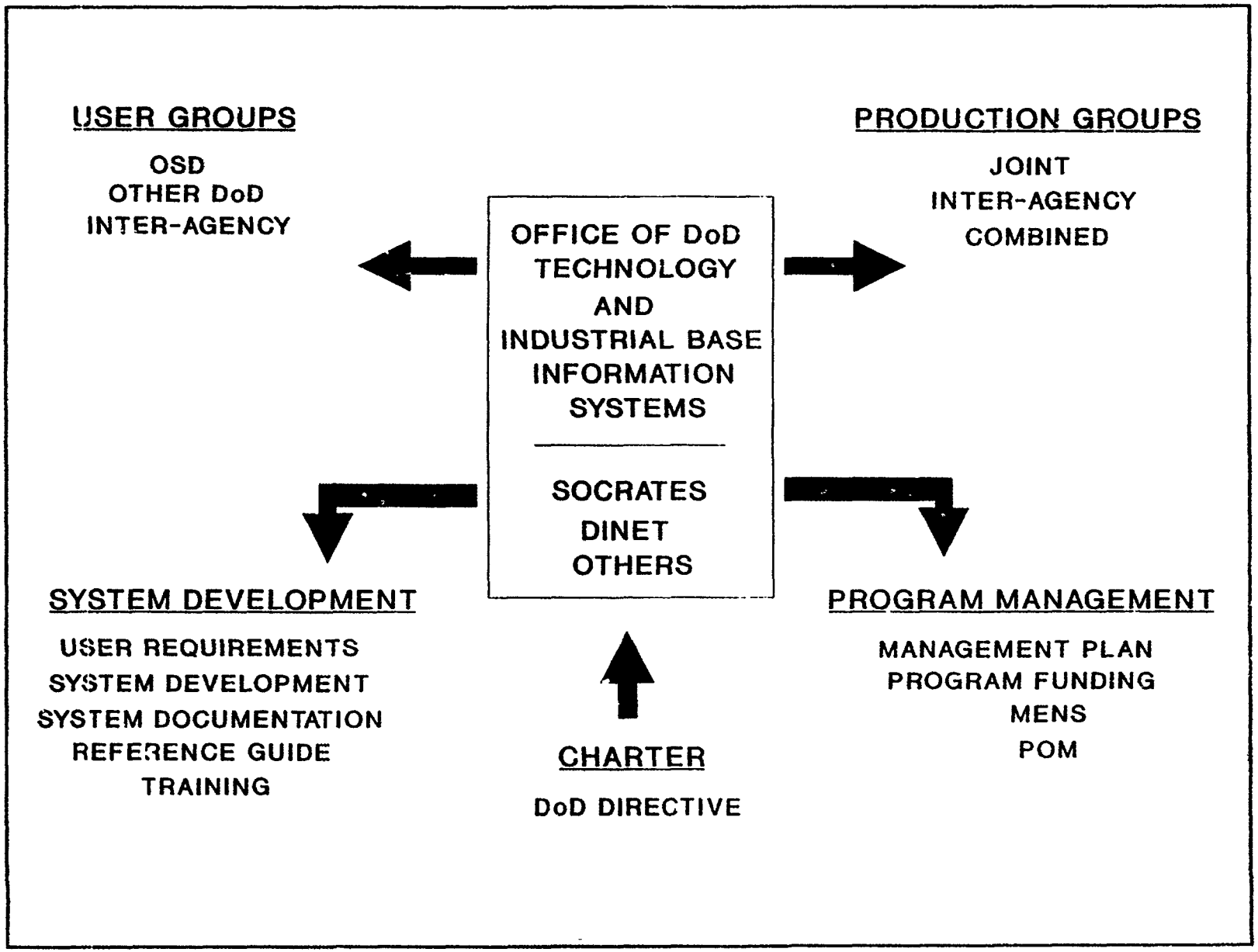

Figure 1. Recommended Actions

1.1 PURPOSE.

The purpose of this study is to review two existing Department of Defense (DOD) technology and industrial base information systems, Project SOCRATES and the Defense Industrial Network (DINET), and to describe their basic system parameters, to compare and evaluate their expected results and uses, to present their current developmental/operational status, and to make recommendations to assist in improving their programs. (See Figure 1-1, DOD Information Systems.)

SOCRATES	-	**A FOREIGN TECHNOLOGY CAPABILITY ASSESSMENT SYSTEM**
DINET	-	**A PRODUCT-SPECIFIC INDUSTRIAL BASE CAPABILITY ASSESSMENT SYSTEM**

Figure 1-1. DOD Information Systems.

1.2 BACKGROUND LEADING TO THIS STUDY.

1.2.1 Report by the Under Secretary of Defense (Acquisition). In a report to the Secretary of Defense, Bolstering Defense Industrial Competitiveness (July 1988), the Under Secretary of Defense (Acquisition) considered "... options to ensure a strong industrial base that will enable the (United States) to react appropriately and successfully to any threat" and also discussed the establishment of analytical measures to assess domestic and global industrial capabilities. In his words:

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The USDA(A)'s detailed conclusion and recommendation on this subject will be found in Appendix A.

1.2.2 **U.S. General Accounting Office (GAO) Testimony to Congress.** On July 18, 1989, the Assistant Comptroller General for National Security and International Affairs, Mr. Frank C. Conahan, testified before the House Subcommittee on Legislation and National Security (as subcommittee of the Committee on Government Operations). The subject of this opening statement was: "Official Information on the U.S. Defense Industrial Base." The testimony contained a detailed discussion of the federal government's data collection and coordination efforts related to the industrial base. A major reason for this interest in data collection is the importance of having a means to measure the impact and extent of dependence on foreign sources for components used in U.S. weapons systems.

Mr. Conahan cited the USD(A)'s report and stated that "some efforts underway are intended to systematically collect and analyze industrial base data, including the extent of foreign dependency. However, they have been slow in coming to fruition and/or have not been adequately justified to receive necessary support. Also, there is no system in place to assist policymakers in being aware of or gaining access to information on existing databases and models on industrial base matters."

Mr. Conahan further stated that " DOD's current ad hoc approach to defense industrial base data collection and analysis can provide information on general industry sectors and foreign dependencies through special studies. However, the ad hoc approach is inefficient and of limited effectiveness because it (1) provides only

limited visibility into foreign dependencies at subtier industries, (2) does not facilitate the identification of acquisition strategies, and (3) does not shorten DOD's decisionmaking process for acquiring weapons systems, subsystems, and components by facilitating market research as a more systematic approach would. DOD officials stated that reliance on ad hoc data collection, which is based on varying methodologies, puts DOD in a reactive role and limits its ability to identify trends in critical industrial sectors."

The complete text of Mr. Conahan's prepared statement is given in Appendix B.

1.2.3 The House of Representatives Conference Report. The House conference report authorizing DOD appropriations for fiscal year 1990 stated that "the conferees agree that the two existing DOD programs, the Defense Industrial Network (DINET) and the Defense Intelligence Agency's Project SOCRATES, should be consolidated with the Defense Industrial Base Office to support research, development and acquisition activities of the Under Secretary of Defense for Acquisition. The conferees direct that funding for consolidation and implementation of defense industrial information activities be taken from funds appropriated to the Department of Defense in support of the Under Secretary of Defense for Acquisition."

1.3 REFERENCES, DEFINITIONS, ABBREVIATIONS, AND ACRONYMS.

1.3.1 References. References used for this study are contained in Appendix G.

1.3.2 Industrial Base. The critical term, "industrial base" as used in this study is defined as: That part of the total industrial production, repair, and maintenance capability in the United States and Canada, both private and government, which supports, directly or indirectly, DOD activities.

1.3.3 Definitions, Abbreviations and Acronyms. Definitions of terms used in this study are contained in Appendix H. Abbreviations and acronyms are contained in Appendix I.

SECTION 2 - PROJECT SOCRATES

2.1 INTRODUCTION TO PROJECT SOCRATES.

Project SOCRATES is the Defense Intelligence Agency (DIA) program whose goal is to develop and operate an automated foreign technology capability assessment system. This system is designed to analyze and track all significant technological capabilities worldwide and to compare these capabilities to similar U.S. capabilities. Information on a foreign country's technological competence or capability lends itself to systematic collection, analysis and automation, since technological advancement requires substantial internal or foreign investment and becomes visible in the country's civilian marketplace, in the country's military capability, or both.

2.1.1 Technology Strategic Planning (TSP). The key to the effective use of SOCRATES is through Technology Strategic Planning (TSP). Within Project SOCRATES TSP is defined as "the systematic use of global technology resources to achieve specific objectives, thereby, increasing U.S. competitiveness against economic and/or geo-political rivals." TSP provides the basis for making informed choices of those entities (nations, corporations, and organizations) most appropriate to target for cooperation with the U.S. in the development and/or production of key technologies (joint

ventures, codevelopment, coproduction, etc.) The goal of such cooperation is enhancement of the U.S. technology base. TSP also makes possible the intelligent selection and prioritization of worldwide marketing options. In addition it can identify targets for intelligence exploitation to gain or recoup a technical advantage in a particular field. Targets can be specific governments, institutions, or businesses, since SOCRATES often reaches a level of detail that identifies key individuals, sub-agencies, or business divisions. Finally, TSP can serve as a budget planning tool for business or government by identifying the most critical technology areas offering a significant return on investment, thus making optimal use of scarce R&D funds.

2.1.2 The SOCRATES System. The SOCRATES system is a complete information system designed to support the technology planner. The SOCRATES system consist of the following:

- Defining and outlining the selected technology (i.e, breaking down the technology into its constituent parts),

- Collecting raw data on worldwide capability for the constituent parts of the technology,

- Analyzing the raw data to produce assessments on the technology,

- Manipulating the completed assessment to generate reports that address specific customer requirements, and

- Disseminating the reports.

A general overview flowchart as provided by the Project SOCRATES office is shown in Figure 2-1, Project SOCRATES.

2.2 BACKGROUND LEADING TO THE INITIATION OF PROJECT SOCRATES.

Project SOCRATES was initiated by the Department of Defense in 1983 as a consequence of the Export Administration Act of 1979.

2.2.1 Export Administration Act of 1979. The Export Administration Act of 1979 restricts the export of goods and technology that could aid the military potential of other countries to the detriment of United States national security. Controls are authorized when restricting access to other countries furthers United States foreign policy or protects the domestic economy. While, the Act gives broad powers and discretion to the President and the Secretaries of Defense and Commerce, it requires that certain goods and technologies be generally restricted and that the Secretary of Defense develop a Military Critical Technologies List (MCTL).

The Act also requires the Secretary of Commerce, in consultation the Secretary of Defense, to review on a continuing basis, the

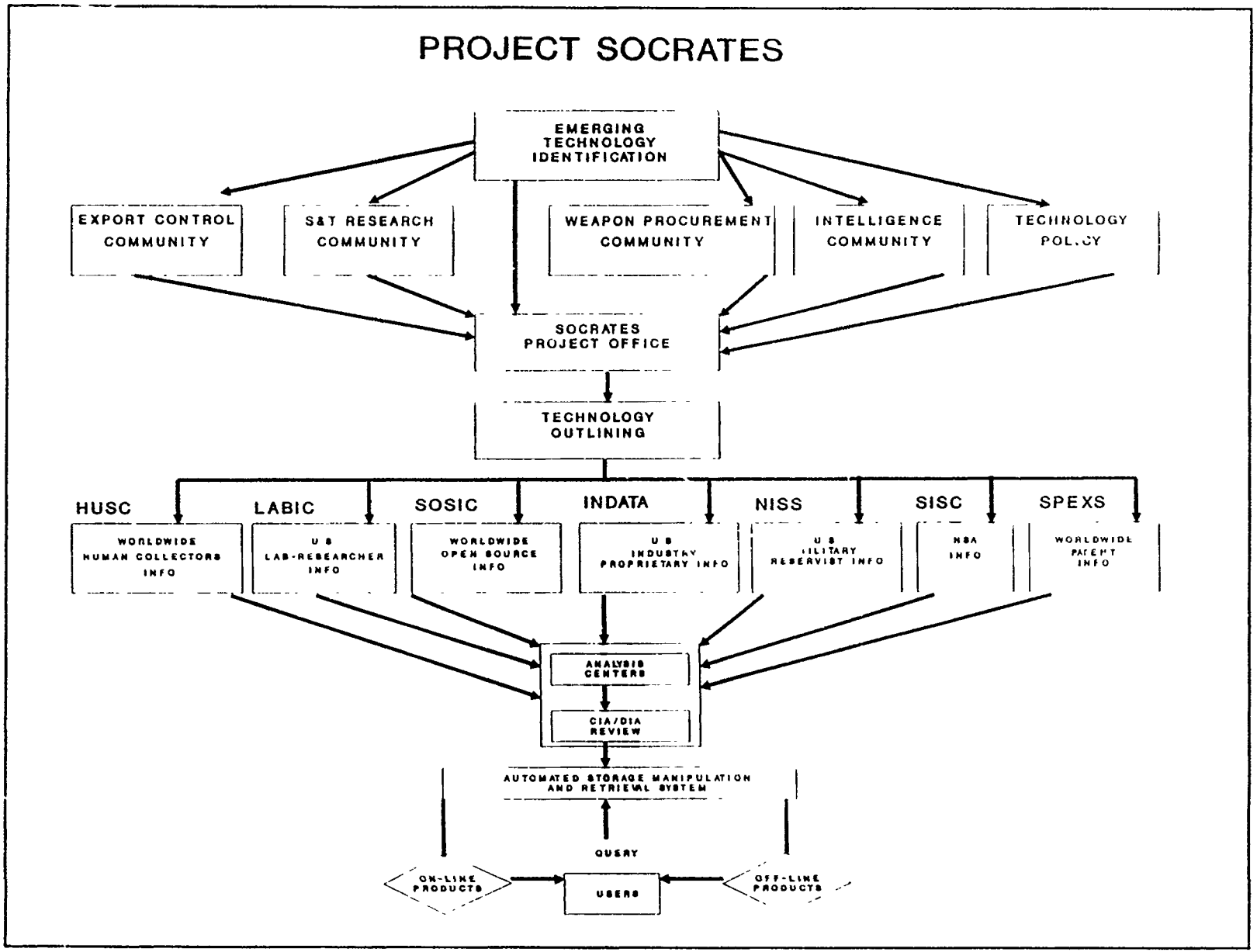

Figure 2-1. Overview of the SOCRATES System.

licensing of goods or technology sent to countries to which U.S. exports are controlled.

The Act further states that "each department or agency of the United States with responsibilities with respect to export controls, including intelligence agencies, shall, consistent with the protection of intelligence sources and methods, furnish information to the (Department of Commerce's) Office of Foreign Availability concerning foreign availability of goods and technology subject to export controls..."

2.2.2 DOD Directive 2040.2. This DOD Directive, subject: Industrial Transfer of Technology, Goods, Services, and Munitions, implements relevant portions of the Export Administration Act of 1979. Special attention is given "to rapidly emerging and changing technologies to protect against the possibility that militarily useful technology might be conveyed to potential adversaries before adequate safeguards can be implemented." It requires the Director of DIA to "assess the foreign availability of technology, goods, services and munitions proposed for transfer" from the U.S.

2.4 MISSION OF PROJECT SOCRATES.

The mission of Project SOCRATES is to provide government decisionmakers with unbiased foreign capability assessments for specific technologies to assist in formulating United States

technological and industrial research, development, procurement, and trade policies.

2.5 OBJECTIVES OF SOCRATES.

Project SOCRATES has identified the following objectives:

- Increase the technology base of the United States in a more timely and cost effective manner; this is focused on the DOD laboratories and includes identification of potential targets for reverse technology transfer.

- Decrease cost and procurement time of U.S. military hardware by using foreign technology developments and capabilities through identification of prospects for joint ventures, cooperative development, coproduction, licensing agreements, or purchase of end products.

- Decrease technology transfer to our politico-military and economic competitors while increasing the competitiveness of U.S. companies in the worldwide marketplace by affecting export policy decisions, case processing, control lists, and the customs watch lists.

2.6 DEFINED CAPABILITIES OF SOCRATES.

SOCRATES supports the decisionmaker/planner by:

- Providing a Technological Overview. Technological interrelationships are identified by first breaking down target technologies into individual end items, critical technology elements, key commodities and key parameters. Then, interrelationships between technologies are displayed by tracking their common commodities and end items.

- Tracking Worldwide Technology Capabilities. The relative status of technology in technologically significant countries is assessed by determining the "year(s) ahead" or "year(s) behind" the defined baseline U.S. capability to develop, produce or use end items and key commodities. The defined U.S. capability is established as "0 years." This assessment establishes an upper capability boundary for a particular country in a given technological area.

- Providing Capability for Path Analysis of Technologies. SOCRATES also provides the capabilities both to predict the most likely technology path that will be followed by a military or commercial adversary and to determine that technology path offering the U.S. the best return on its technological investment.

2.7 DESIGN CONSTRAINTS TO THE SOCRATES SYSTEM.

2.7.1 Scope of Assessment. The SOCRATES Technology Outline is not intended to provide an exhaustive treatment of a country's technological capability in a given technology. It is designed to contain only those key items that are critical to having a state-of-art capability.

2.7.2 Point-in-Time. SOCRATES compares a country's capabilities to develop, produce and use a given technology with those of the U.S. for only a specific point-in-time.

2.7.3 Probability of Transfer. The probability of transfer can be defined as the likelihood that a given technology can be obtained, either legally or illegally, from a country possessing that technology. Since the probability of transfer is time-sensitive, SOCRATES does not assess it directly, but rather SOCRATES supports the decisionmaker/planner with data that may be helpful when transfer is being assessed.

2.8 SOCRATES USERS.

2.8.1 General User Community. SOCRATES users are described generically; no specific user is identified. The following five Government communities are supported by SOCRATES (A detailed list of potential users is shown in Figure 2-2, SOCRATES Users.):

- Technology Policy Making Community.

- Research & Development Community.

- Military Weapons System Procurement Community.

- Intelligence Community.

- Export Control Community.

2.8.2 SOCRATES User Advisory Board (SUAB). Although the intent to establish a SUAB was announced by the Project SOCRATES office in October 1988, this has not yet been accomplished. It is intended that the SUAB sponsor an annual meeting of representatives from each user agency. The major purpose of the SUAB will be to assist users in gaining a better understanding of SOCRATES capabilities and to provide the project office with a better understanding of user requirements.

2.8.3 Recent Use. In a recent example of assistance provided by SOCRATES, the Senate Armed Services Subcommittee on Defense Industry and Technology requested a worldwide technology capability assessment of High Definition Television (HDTV). This assessment supported the Subcommittee's attempt to determine whether the loss of HDTV technology or a failure to maintain the lead in global HDTV

development would seriously damage those U.S. electronics and semiconductor industries vital to national security.

POTENTIAL SOCRATES USERS

TECHNOLOGY POLICY MAKING COMMUNITY:

- OFFICE OF THE SECRETARY OF DEFENSE
  - Deputy Under Secretary of Defense (Trade Security Policy)
  - Deputy Under Secretary of Defense (Policy)
  - Deputy Under Secretary of Defense (International Programs and Technology)
- DEFENSE AGENCIES
  - Defense Technology Security Administration
  - Defense Intelligence Agency
  - National Security Agency
  - Defense Security Assistance Agency
- MILITARY SERVICES
  - Army
    - Army Staff
    - Army Material Command
  - Navy
    - OCNO, OP-62
    - Naval Intelligence Command
    - Naval Systems Commands
  - Air Force
    - CVAIM
    - Air Force Systems Command
- NON-DOD
  - Department of Commerce
    - Office of Export Administration
    - Office of Foreign Assessments
    - Office of Foreign Availability
  - Department of State
    - Office of Munitions Control
    - Strategic Trade Control
  - Director of Central Intelligence
    - Technology Transfer Intelligence Committee

EXPORT CONTROL COMMUNITY:

- Department of Commerce
  - Office of Export Enforcement
- Department of Justice
  - Federal Bureau of Investigation
- Department of Treasury
  - Customs Service
- Foreign Technology Division

Figure 2-2. SOCRATES Users.

POTENTIAL SOCRATES USERS (Continued)

WEAPONS SYSTEM PROCUREMENT COMMUNITY:

Office of the Secretary of Defense
Under Secretary of Defense (Research and Engineering)

Military Departments

ARMY

Assistant Secretary of the Army for Research, Development and Acquisition
Deputy Chief of Staff for Research, Development and Acquisition

NAVY

Assistant Secretary of the Navy for Research, Engineering, and Systems
OP-98 (Research, Development, Test and Evaluation)

AIR FORCE

Assistant Secretary of the Air Force for Research, Development and Logistics
AF/RD
Air Force Systems Command

RESEARCH AND DEVELOPMENT COMMUNITY:

Deputy Under Secretary of Defense (Research and Advanced Technology)
Defense Advanced Research Projects Agency
DOD Laboratories
Departmental Laboratories Directors
Office of Naval Research
Army Research Office
Air Force Systems Command

INTELLIGENCY COMMUNITY:

Technology Transfer Analysis Center
Foreign Science and Technology Center
Foreign Technology Division
Naval Intelligence Support Center
Missile and Space Intelligence Center
Armed Forces Medical Intelligence Center
Los Alamos National Laboratory
Sandia National Laboratory
Department of Energy (Intelligence Division)

Figure 2-2 (Continued). SOCRATES Users

2.9 PROJECT SOCRATES ORGANIZATION.

2.9.1 General. Project SOCRATES, currently, operates under the oversight of the Defense Intelligence Agency (DIA) in Washington, DC. The project development and implementation is being done in the Directorate for Scientific and Technical Intelligence (DT).

2.9.2 Project SOCRATES Office. The Foreign Availability Analysis Section (DT-5B3) of the Technology Transfer Branch (DT-5B) is the Project SOCRATES office. The Technology Transfer Branch is part of the Research and Technologies Division (DT-5). Figure 2-3, Technology Transfer Branch, DIA, shows the organization of the Branch.

- **Project Director.** Mr. Michael Sekora is the Director for Project SOCRATES. His broad range of responsibilities includes program development and implementation.

- **Deputy Project Director.** Mr. William Stryker is the senior technology analyst in the Project SOCRATES office and acts as the Deputy Project Director. He has the primary responsibility for managing the technology outlining, data collection, and analysis efforts.

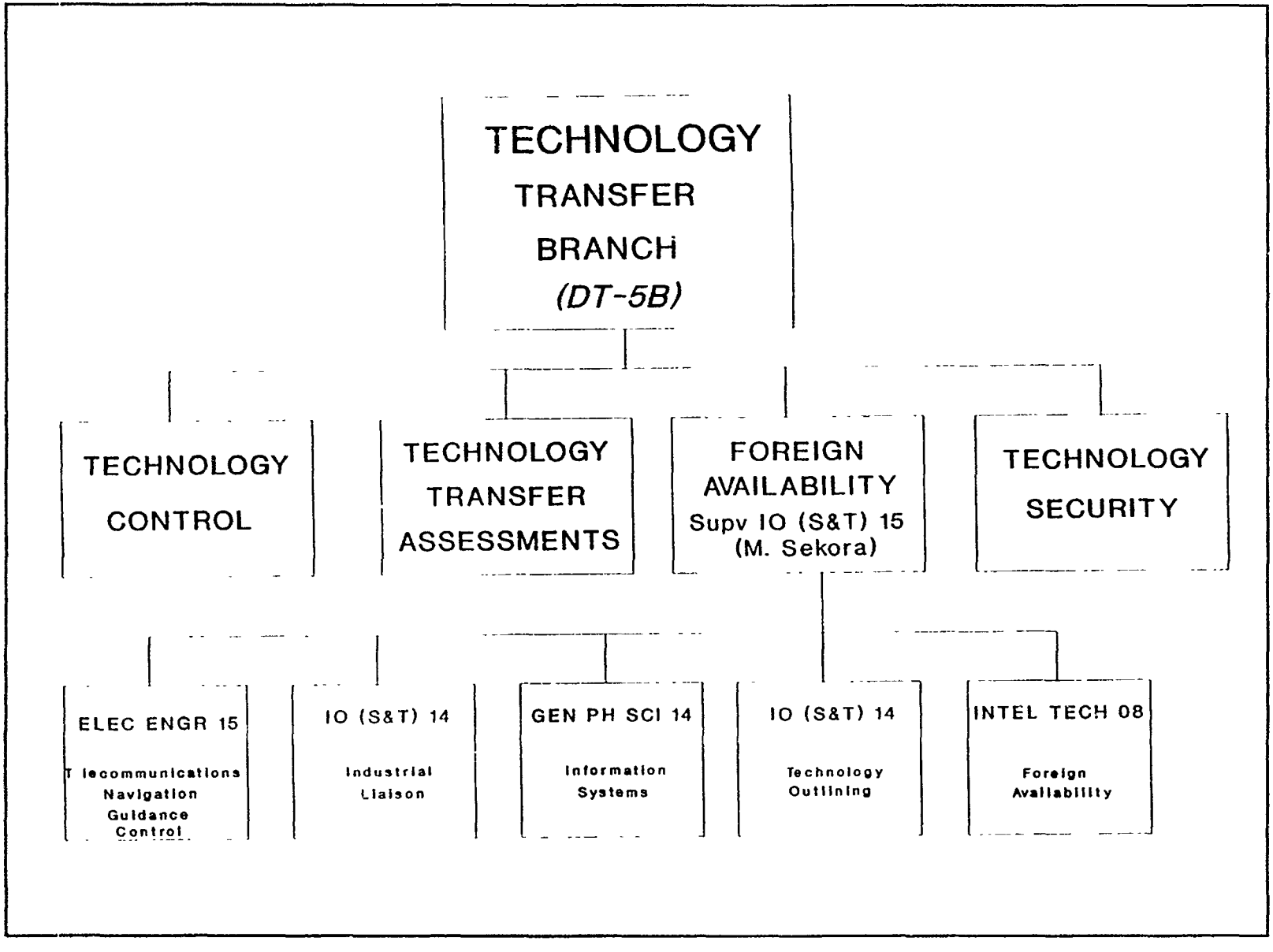

Figure 2-3. Technology Transfer Branch, DIA.

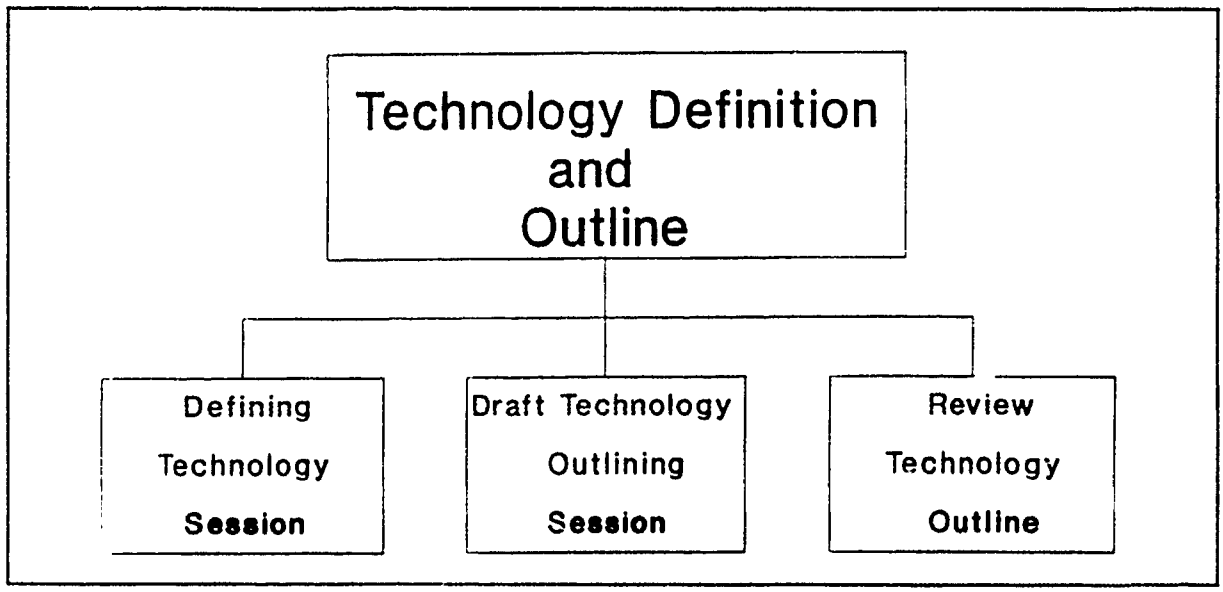

Figure 2-4. Technology Definition and Outlining.

2.10 SOCRATES PRODUCTION METHODOLOGY.

2.10.1 Selecting Technologies for Assessment by SOCRATES. In general, the selection of technologies to be assessed by SOCRATES is based on user requirements. However, the DOD Military Critical Technologies List (MCTL) may also be used as an index from which technologies are selected.

2.10.2 Technology Definition and Outline. The addition of information to the SOCRATES system begins with defining and outlining the target technology. (See Figure 2-4, Technology Definition and Outline.)

2.10.2.1 Target Technology Defining Session. The technology is defined by a Project SOCRATES analyst working in close coordination with the information user. This technology definition is a critical prelude to outlining the technology, since it establishes the scope of the target technology information required by the user.

2.10.2.2 Draft Technology Outlining Session. All SOCRATES technology assessments are focused on the state-of-the-art performance parameters of the technology and are presented in a Technology Outline.

- **Technology Outline.** The Technology Outline is not an exhaustive list of all aspects of a technology, but, as stated earlier, focuses on the critical components (end items and key commodities), which are essential to a state-of-the-art capability. Technical alternatives within the technology are also identified in the Technology Outline. Each country with potentially significant capabilities is assessed and its relative capabilities quantified in terms established in the Technology Outline. This assessment, which is intended to be broadly objective in nature, is performed by experts in the technology and makes use of multiple sources of information that are correlated to help insure accuracy. Assessments are normally updated annually, but for more dynamic or emerging technologies, updates can be performed more frequently. With

SOCRATES TECHNOLOGY OUTLINE

Project SOCRATES

TECHNOLOGY NUMBER: 7.1.1

TECHNOLOGY: WAFER PREPARATION TECHNOLOGY

DEFINITION: The technology of transferring a crystal of semiconducting material (e.g., silicon, gallium arsenide) into a wafer substrate on which an integrated circuit can be manufactured. This includes the slicing of the crystal into wafers, then grinding, polishing, and doping them to achieve the required properties. The objective is to produce the maximum size wafer with minimum irregularities.

1. Integrated Circuit Wafer Preparation (A & B)
   A. Substrate Wafer (1 & 2)
      * Maximum Orientation Accuracy
      * Maximum Resistivity Accuracy
      * Maximum Percent Defect Free
      1. Wafer Slicing (a or b)
         a. Interior Diameter Saws
            * Maximum Cut Alignment Accuracy
            * Minimum Kerf Width
         b. Wire Saws
            * Maximum Cut Alignment Accuracy
            * Minimum Kerf Width
      2. Wafer Lapping (a)
         a. Wafer Polishers
            * Minimum Induced Stress
            * Maximum Polishing Depth
   B. Epitaxially Built-up Wafers(1 or 2 or 3)
      * Minimum Layer Thickness
      * Maximum Orientation Accuracy
      * Maximum Wafer Flatness
      1. CVD Epitaxy (a)
         a. CVD Epitaxy Reactors
            * Maximum Temperature Control
            * Maximum Number of Deposition Cycles
      2. Molecular Beam Epitaxy (a)
         a. MBE Machines
            * Maximum Beam Precision
            * Maximum Control of Evaporants
      3. Liquid Phase Epitaxy (a)
         a. Liquid Phase Epitaxy Reactors
            * Maximum Deposition Precision
            * Maximum Number of Gates

NOTE: THIS TECHNOLOGY OUTLINE IS FOR EXAMPLE PURPOSES ONLY - IT DOES NOT CONTAIN REAL INFORMATION.

Figure 2-5. Example of a Technology Outline.

each update, the Technology Outline evolves as the technology itself evolves. An example of a Technology Outline is shown in Figure 2-5, Example of a Technology Outline.

The draft Technology Outline is produced by the Project SOCRATES outlining analyst supported by experts for DOD, other Government agencies, and industry, working under contract to the Project SOCRATES office. This initial outlining process normally takes one or two weeks to complete.

2.10.2.3 Review Technology Outline. Once the draft Technology Outline has been prepared, it is disseminated to other Government and industrial experts for review. Comments from this review are collated, reviewed, discussed, and then incorporated, if accepted by the SOCRATES analyst, into the final Technology Outline. This final outline is then used as the basis for the data collection effort.

2.10.3 Data Collection and Delivery. The data collection effort is central to the success of SOCRATES. Data is collected worldwide from a wide range of sources. Although the Project SOCRATES office is part of Headquarters, DIA, most of the data is collected from non-DIA sources through the collection organization shown in Figure 2-6, Data Collection and Delivery, and discussed below.

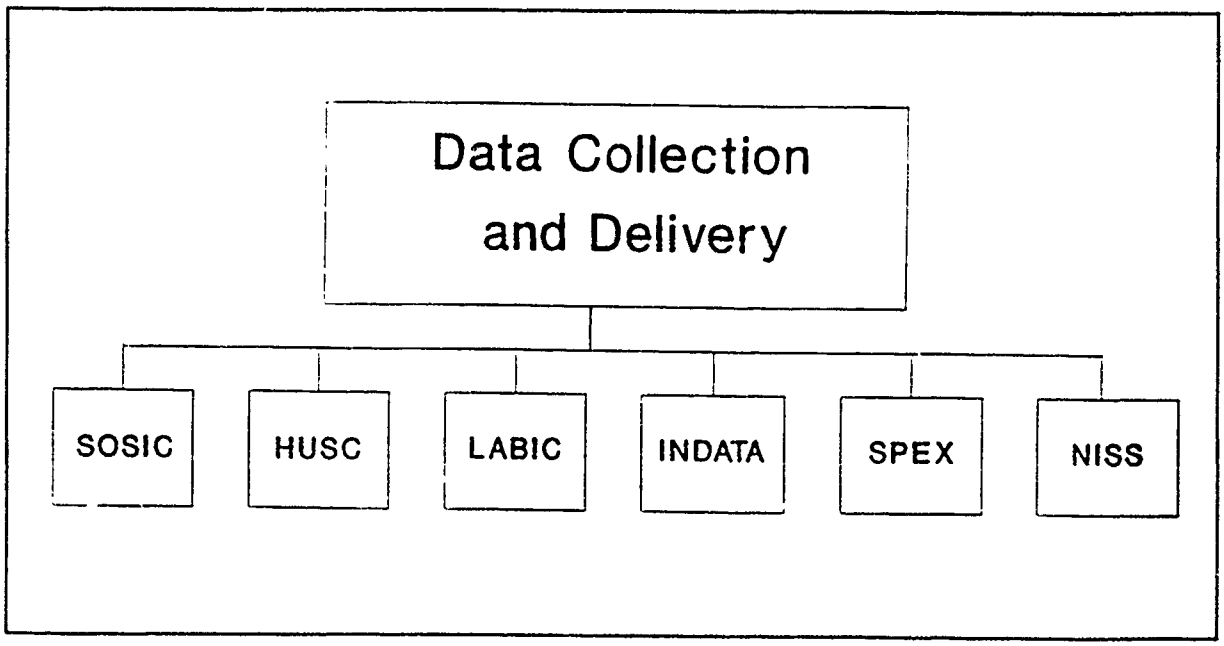

Figure 2-6. Data Collection and Delivery.

- **SOCRATES Open Source Information Center (SOSIC).** This center was established as part of SOCRATES to provide the technology analyst with a method of achieving broad, comprehensive exploitation of open source information. The center exploits over 2600 commercial on-line computer databases. This database coverage includes trade publications, technical journals, symposia proceedings, patent applications, marketing and promotional literature, and general interest news media products.

  SOSIC information is accessed by calling a toll-free number and performing an on-line request of the specific unclassified data, publications, and abstracts needed for a particular line of research.

The SOSIC software has been organized to perform searches based on the technology outlines, with searches either expanded or refined through the use of additional key words-/phrases linked by logical "and" or "or" statements.

- **Human Intelligence Scientific and Technical Collection Program (HUSC).** This program is a source of classified scientific and technical (S&T) intelligence data that is derived from human resources. The HUMINT reporting process to SOCRATES is made more efficient and effective by using the Technology Outline as a guide for reporting data, thus increases the number of relevant reports reaching the Project SOCRATES technology analyst.

- **Laboratory Researcher-to-Intelligence Analyst Cooperative (LABIC).** Project SOCRATES, through DIA, has formalized agreements with Army, Navy and Air Force laboratories to use the expertise of their analysts, engineers, and scientists. Appropriate laboratories and individual experts for each SOCRATES technology outline are identified and made aware of each other. The appropriate experts at a government laboratories are identified from listings available from the Defense Technical Information Center (DTIC). The agreements are with the Army Material Command, Air Force Systems Command, Naval Ocean Systems Center, and the Naval Weapons Center.

- **Industrial Data Loan Program (INDATA).** SOCRATES' INDATA program establishes a procedure whereby individuals and companies lend SOCRATES technical information concerning their foreign competitors' technical capabilities for a one-year period. SOCRATES established INDATA with the cooperation of the Industry Coalition on Technology Transfer (ICOTT), which represents over three thousand U.S. high technology firms.

- **SOCRATES Patent Exploitation Program (SPEX).** Project SOCRATES has established an on-line capability to access worldwide patents.

- **National Industrial Information Support to SOCRATES (NIISS).** This is a projected capability intended to provide a cross-section of expert technical opinion assessing the U.S. state-of-the-art for a given technology outline. These assessments, covering a ten-year period, will be used to gather the information that will establish the U.S. technology baselines against which other countries' capabilities are measured.

2.10.4 Analysis. The analysis process shown in Figure 2-7, Analysis, consists of the following three phases:

2.10.4.1 Preliminary Analysis. The product of the data collection effort and the initial data produced by industry experts at the Technology Outline drafting session are brought together for

preliminary analysis. During this phase, the SOCRATES analysts collate and sort the data against the Technology Outline (i.e., against end items, key commodities, and key parameters) to determine whether additional collection efforts or secondary level searches are necessary. When the additional collection efforts are completed, all data are collated and sorted as required for the next two analysis phases including a sort into classified and non-classified categories. This preliminary analysis is conducted with technical support from the Naval Ocean Systems Center (NOSC).

2.10.4.2 Team Analysis Session. SOCRATES analysts and industry experts (normally, the same experts who participated during the draft technology outlining session) are brought together for analysis of the unclassified data. During this phase the collected data are put into formats usable by the SOCRATES system and any conflicting data adjudicated.

2.10.4.3 Final Analysis. The SOCRATES analysts conduct the final analysis, since it is during this phase that classified data and proprietary data (which is not releasable to defense contractors) are factored into the results from the team analysis session to produce the final assessed data for the target technology. The "years ahead/years behind" numbe generated for key commodities and parameters. The data is now ready for input into the SOCRATES automated system.

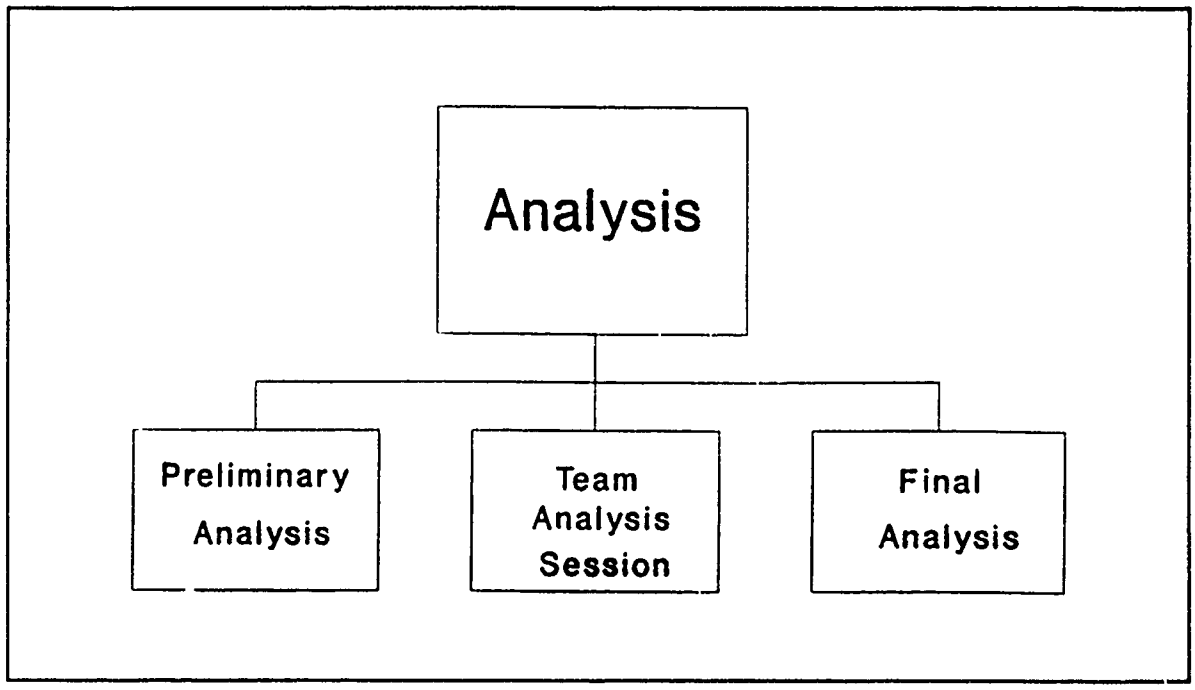

Figure 2-7. Analysis.

2.10.5 **Data Entry**. The data entry shown in Figure 2-8, Data Entry consists of the following two phases:

2.10.5.1 **Enter Assessment Data**. The assessed data produced by the SOCRATES analyst is entered into a PC-based automated system.

2.10.5.2 **Review for Errors**. A quality control review is conducted to ensure that the assessed data has been correctly entered into the system and/or that the data is logically correct.

2.10.6 **Validation**. The validation process shown in Figure 2-9, Validation consists of the following two phases:

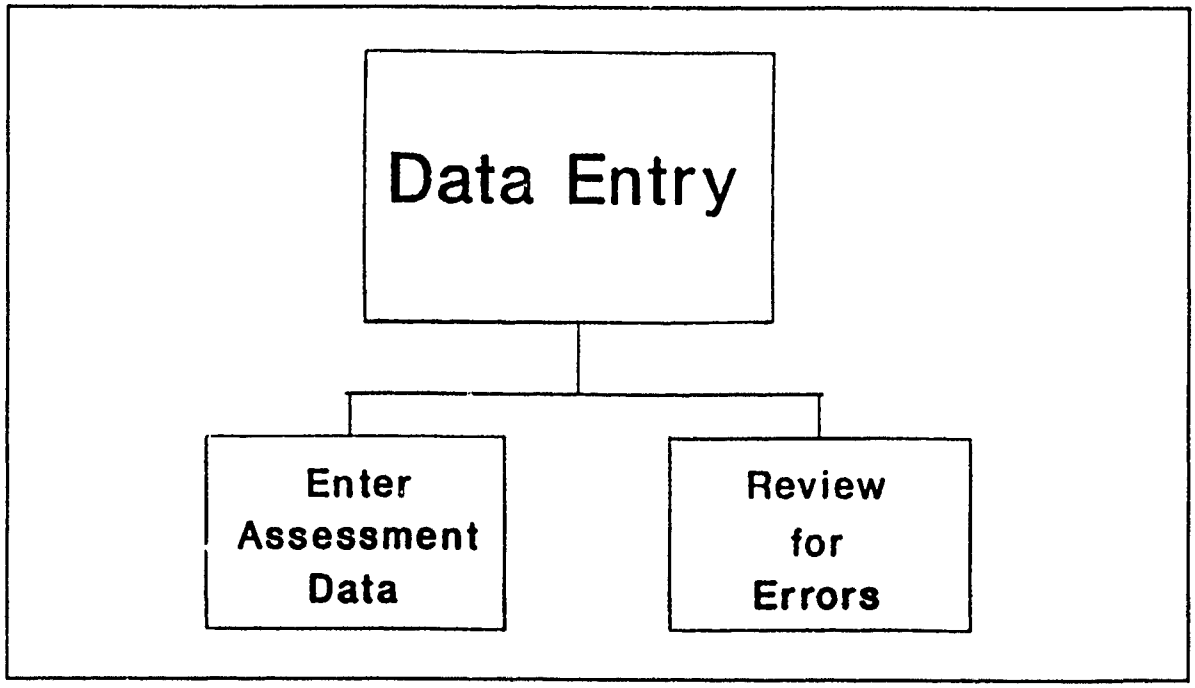

Figure 2-8. Data Entry.

2.10.6.1 DIA/CIA Review Session. The final data for the target technology is submitted to the Defense Intelligence Agency (DIA) and the Central Intelligence Agency (CIA) for review and comment. The comments received from these agencies may be incorporated or cause reassessment by the SOCRATES analyst.

2.10.6.2 S&T Production Center Review. This final data for the target technology is also submitted to the Military Services' science and technology information production centers for review and comment. The comments received from these centers may be incorporated or cause reassessment by the SOCRATES analysts.

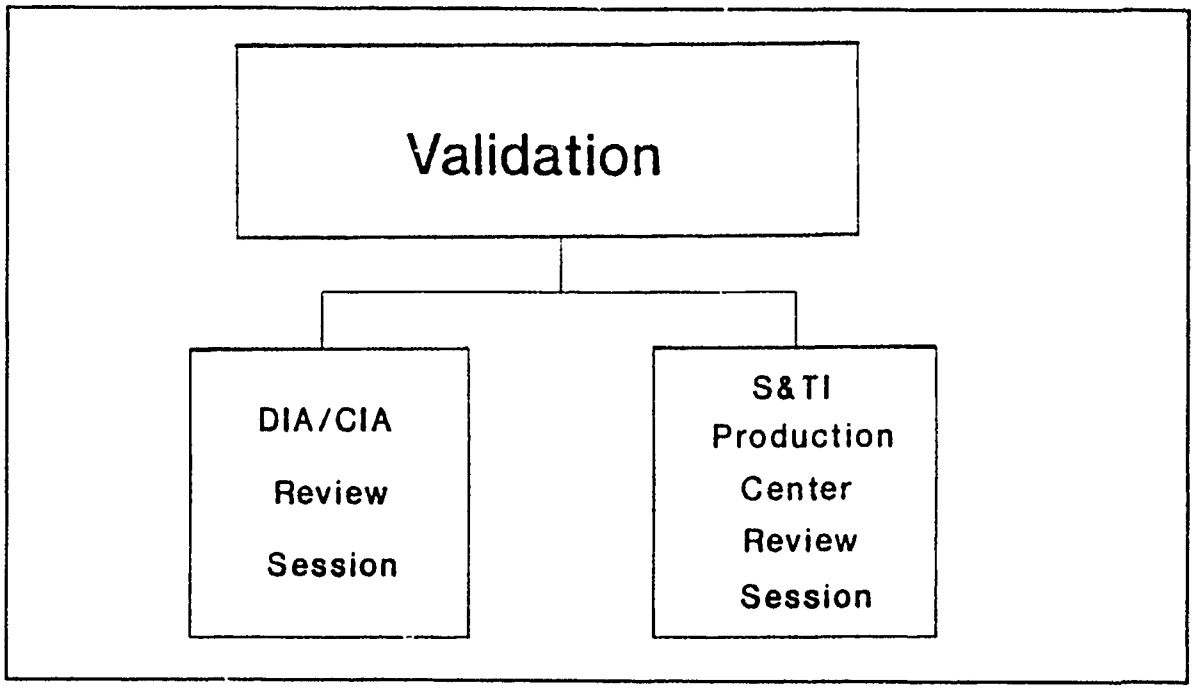

Figure 2-9. Validation.

2.10.7 Printing and Distribution. On routine production reports, the printing and distribution process is shown in Figure 2-10, Printing and Distribution consists of the following two phases:

2.10.7.1 Submit to Printer. The final reports as required by the user are submitted to the printing plant for reproduction.

2.10.7.2 Review Distribution List. This distribution list for the target technology is reviewed by the SOCRATES office to ensure the reports are correctly distributed to users.

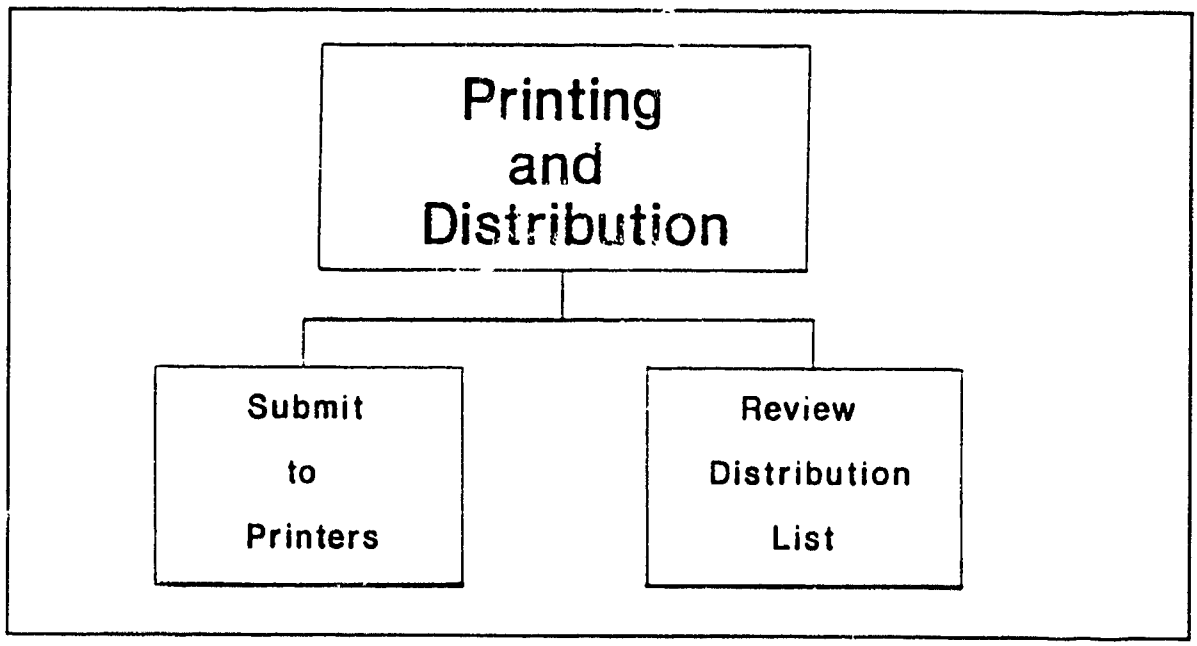

Figure 2-10. Printing and Distribution.

2.11 DESCRIPTION OF THE DATA.

2.11.1 Data Access. The data entered into the SOCRATES system database is classified SECRET, NOFORN, and NOCONTRACT. This classification limits the access to products from the database, since data elements are not classified individually.

2.12 SYSTEM AUTOMATION.

The SOCRATES database resides on a IBM-PC/XT or IBM-PC/AT compatible microcomputers equipped with a high capacity (hard disk) storage device and tied into a local area network (LAN) bridged to a SUN work station. A DEC VAX mini-computer is projected for future growth. The PC system uses standard MS-DOS version 3 or PC-

DOS version 3. The database was created for Project SOCRATES by Advanced Technology Systems, using Ashton-Tate DBaseIII development software as the basis for the customized data structures and user/operator interfaces. The SOCRATES database is fully interactive and menu-driven. However, the user interface is primarily geared towards the generation of pre-formatted reports. The user specifies the desired report type, and is then guided through the selection of a specific technological area and other parameters necessary to identify the specific information he wishes to see in the report.

2.13 USER/SYSTEM INTERFACE.

2.13.1 Interactive Use. SOCRATES has not yet developed a capability for interactive manipulation of data by users. Information is presented to users primarily in predefined reports.

2.13.2 REPORTS. While the SOCRATES database system operator can provide reports tailored to specific customer needs, there are only three primary report formats that can be called up by the general SOCRATES users. These primary reports are the basic products of the system and can be specified through the interactive reports generator module.

- **The Technology Outline.** The Technology Outline, which is used to guide data collection, is a first level summary report on

the target technology. The Technology Outline was previously discussed in paragraph 2.10.2.2.

- **The Worldwide Technology Status Report (TSR).** The TSR displays the Technology Outline with a line-by-line comparison of a country's technology development and production capabilities to those of the U.S. Information on every country with a technologically significant capability can be displayed. This comparison is expressed in terms of the number of "years ahead of the United States" or "years behind the United States" in development and production capabilities. The "years ahead/behind" numbers represent only snapshots in time and may not be related to the actual time needed by a country to catch-up to the U.S, since each country's technology level may develop at a rate greater than, less than, or equivalent to the U.S. rate of development for that technology. (See Appendix C for an example of the TSR.)

- **The Country Technology Assessment Report (TAR).** The TAR is prepared for each country in which there is significant capability in the technology of interest. Individual assessments of a given country's best development and production capability together with a comparison to the same U.S. technology are displayed alongside each line of the Technology Outline. Analytical comments are included if needed. For both development and production phases of the technology, the

commodities (equipment, material, or know-how) that establish the upper boundary of the country's capabilities are identified. For each of these commodities, the following information is displayed:

- Years ahead/behind the U.S.
- Item Descriptor.
- Organization/company.
- Parameter Value.
- Export Control Commodity Control List Number.
- Source of Technology.

(See Appendix D for an example of the TAR.)

2.13.3 Distribution. SOCRATES has identified an extensive distribution for its products, which are provided in both hard-copy and microfiche formats. (See Appendix E for an example of SOCRATES product distribution.)

2.14 CURRENT STATUS.

2.14.1 SOCRATES Assessments. As of January 1990, the 41 technology capability assessments, shown in Figure 2-11, Status of Technology Assessment, have been completed under Project SOCRATES. Some of these technology assessments have missed their annual review cycle because of insufficient funding and have not been updated for one or more years. Twenty other assessments are projected for future completion.

2.14.2 The House of Representatives Conference Report. This conference report authorizing appropriations to DOD for fiscal year 1990 states that "the conferees agree that the two existing DOD programs, the Defense Industrial Network (DINET) and the Defense Intelligence Agency's Project SOCRATES, should be consolidated with the Defense Industrial Base Office to support research, development and acquisition activities of the Under Secretary of Defense for Acquisition. The conferees direct that funding for consolidation and implementation of defense industrial information activities be taken from funds appropriated to the Department of Defense in support of the Under Secretary of Defense for Acquisition."

SOCRATES TECHNOLOGY CAPABILITY ASSESSMENTS

MCTL No.	TECHNOLOGY	Assessed	Updated
2.4.1.1	Rigid Magnetic Disc Drive Assemblies	May 87	
5.1.1	High Temperature Composites Coating Technology	Jun 89	*
5.2.1	Carbon-Carbon Matrix Composites Technology	May 89	
5.2.2	Polymer Matrix Composites Technology	Jun 89	*
5.2.5	Metal Matrix Composite Technology	May 89	
5.2.6	Ceramic Matrix Composites Technology	Jun 89	*
6.1.2	High Energy Laser Mirrors and Optical Components	May 88	
6.3.1	Particle Beam Generation Technology	Jul 89	
6.3.2	Particle Beam Position and Control Technology	Jan 90	
6.3.3	Ion Stripping Technology	Jan 90	
6.3.4	Particle Beam Propagation Technology	Jan 90	
6.3.5	Particle Beam Coupling Technology	Jan 90	
6.3.6	Particle Beam Target Affects	Jan 90	
6.3.7	Particle Beam Countermeasures	Jan 90	
7.1.1	Wafer Preparation Technology	May 88	Jun 89
7.1.2	Bipolar Integrated Circuit Technology	May 88	Jun 89
7.8.2	Integrated Circuit Bulk Crystal Growth Technology	Nov 87	Jun 89
8.5.3	Analog-to-Digital and Digital-to-Analog Converters	Sep 88	Sep 89
9.1.1	High Definition Television Technology (Nine interrelated HDTV Technology Outlines completed; collection ongoing.)	Sep 89	
9.6.4.1	Cathode Ray Tube Technology	Jan 90	

* Update postponed due to DIA funds cutback.

Figure 2-11. Status of Technology Assessments.

SOCRATES TECHNOLOGY CAPABILITY ASSESSMENTS (CONTINUED)

MCTL No.	TECHNOLOGY	Assessed	Updated
18.1	High Temperature Superconducting (HTSC) Materials	Mar 88	*
18.2	HTSC Magnets	Mar 88	*
18.3	HTSC Electronics	May 88	*
20.1	Adv/Unconv Radar Sensing Technology	Oct 88	*
20.2	Sensor Fusion Technology	Oct 88	*
20.3	Medium Disturbance Sensing Technology	Oct 88	*
20.4	Electro-Optical Sensing Technology	Oct 88	*
20.5	Acoustic Sensing Technology	Oct 88	*
21.1	Radar Signature Technology	Oct 88	*
21.2	Acoustic Signature Technology	Oct 88	*
21.3	Electro-Optical Signature Technology	Oct 88	*
21.4	Medium Disturbance Signature Technology	Oct 88	
22.1	High Performance Computing Technology	Sep 89	*

* Update postponed due to DIA funds cutback.

Figure 2-11 (Continued). Status of Technology Assessments

SECTION 3 - DEFENSE INDUSTRIAL NETWORK (DINET)

3.1 INTRODUCTION DINET.

The DOD Office of Industrial Base Assessment (OIBA) has developed DINET as a multi-disciplined system that brings together a broad spectrum of information, including data on acquisitions, trade, foreign direct investment, current economic trends, critical military technology, industrial capabilities and military requirements data. DINET is an interactive "automated gateway" system in that it consists of a database loaded with selected data imported from existing and widely dispersed Government databases. It is designed to provide information and analytical data to users throughout the industrial base community.

DINET makes available industrial base capability information on specific products. This information ranges from foreign sources of components for essential end-items to alternate manufacturers to support DOD surge requirements during crises. This information is designed to assist Service staffs in the production, planning, and budgeting process as well as supporting the development of the annual production base analyses.

3.2 BACKGROUND LEADING THE INITIATION OF DINET.

3.2.1 Initiation of the Program. DINET is being developed under the staff oversight of the Deputy Under Secretary of Defense (Industrial and International Programs) by the Office of Industrial Base Assessment (OIBA). The project was initiated in 1985 to stem concerns about the capabilities of the U.S. manufacturers to support and sustain combat forces during periods of conflict and to counter the increased influence international economic events are expected to have on future DOD procurement. It was determined that an automated capability was required to view the overall industrial base and to assess its capability. Also required were improved visibility of suppliers below the prime contractor level and real-time information on the role of foreign suppliers in providing end items, components and products.

3.2.2 Mission Element Needs Statement (MENS). On December 9, 1988, the Under Secretary of Defense (Acquisition), in a memorandum to the DOD Comptroller, stated that improved information on U.S. manufacturing capabilities is required to support priority DOD programs in a competitive international environment. He further stated that he was sponsoring the development of DINET to meet this requirement. Enclosed in the memorandum was a Mission Element Needs Statement (MENS) for DINET and a request that the Comptroller process it through the OSD System Review Council. (See Appendix F for the MENS.) This MENS is still pending review.

It was estimated that the DINET project could be completed by 1993 at a total estimated cost ranging from $7 million to $29 million depending on the design capability alternative selected.

3.3 MISSION OF DINET.

DINET's mission is to support the planner in assessing the manufacturers' ability to meet priority DOD program requirements by providing improved visibility into the U.S. industrial base for critical weapons system components and subcomponents.

3.4 OBJECTIVES OF DINET.

To support the DINET mission, the following system objectives have been identified:

- To provide timely access to industrial planning and capabilities data needed to support crisis management operations,

- To provide coordinated, accurate data for budgeting and programing, industrial preparedness measures, and all other funding mechanisms designed to increase the overall responsiveness and sustainability of the production base,

- To prepare special reports to satisfy stated and likely requirements of both DOD policy makers and the Congress,

- To support project development planning and evaluation, and

- To measure trade-offs between war reserves and peacetime production capabilities.

3.5 EXERCISE PROUD SCOUT 88.

DINET, in prototype form, was demonstrated during the JCS sponscred Exercise Proud Scout 88. This exercise was designed to test the Military Services/Defense Agencies' policies, plans and procedures for mobilization, and emphasized industrial mobilization to support the military's material requirements. Thus, the exercise presented an opportunity to evaluate DINET as a crisis management tool.

3.5.1 User Impressions. In general, the Service staffs' impressions of the system were favorable. They found that the prototype DINET provided information that saved valuable time in developing staff surge options for mobilization.

A major negative finding from the evaluation of DINET was that there is very little data available about surge capabilities below the second-tier supplier. Since some companies at the sub-levels do not deal directly with the Government, there is no information as to their manufacturinq capabilities. A second negative finding is that industrial data is fragmented and inaccurate; there appeared to be little coordination between the Services. And

finally, special studies within the prototype system proved to be time consuming in their preparation.

3.5.2 **New Requirements**. The use of DINET during the exercise generated the following new requirements:

- Greater subtier visibility and alternative sourcing -- both vital for surge requirements,
- Greater foreign source information -- also vital for surge requirements.
- Commercial substitute information, and
- Production rate information.

3.6 AREAS TO BE SUPPORTED BY DINET.

The following problem areas have been identified as candidate for support by the DINET system:

- Acquisitions, mergers and takeovers of military-critical U.S. manufacturing and research facilities,
- Dependence of weapon system procurement on sole foreign sources,

- Diminishing U.S. manufacturing capabilities for critical items,

- International competition and its effect on the U.S. industrial base,

- U.S. Government policy as it effects the industrial base,

- The necessity of U.S. industry to support surge and mobilization requirements,

- Initial response to, and long-term recovery from, localized natural disasters, and

- Issues related to U.S. technology leadership in critical military technologies.

3.7 DINET USERS.

3.7.1 General User Community. DINET users are defined generically; no specific user is identified. As an information system, DINET is being developed to provide generalized support to planners throughout the following five Government communities:

- Policy making community.

- Manufacturing and industrial programs analysis community.

- Technology transfer and export control community.

- Military hardware and procurement community.

- Cooperative development program community.

3.7.2 **Recent Use**. During the crisis management operations relative to the recent San Francisco area earthquake, the DINET system was able to provide the OSD staff and the Federal Emergency Management Agency (FEMA) with information concerning critical defense contractor facilities located in the impacted area.

3.8 DINET PROJECT ORGANIZATION.

3.8.1 **Staff Oversight**. The DINET project operates under the staff oversight of the Deputy Under Secretary of Defense (Industrial and International Programs). Specific responsibility for program development and implementation has been assigned to the Assistant Deputy Under Secretary (Manufacturing and Industrial Programs).

3.8.2 **DINET Project Office**. The DINET project office is part of the Office of Industrial Base Assessment (OIBA).

- **Senior Project Officer**. Commander Bernie Grover, Canadian Forces (Maritime), has overall responsibility for the DINET program. His broad range of project responsibilities include

user interface, project definition, data collection and analysis, automation, information distribution and funding.

- **Project Director**. Mr. Danal H. Dennison, DINET Project Director, is responsible for the day-to-day operation of the system. He is also the Chairman of the North American Defense Industrial Base Organization's (NADIBO) Data Committee.

3.9 DINET INFORMATION PRODUCTION METHODOLOGY.

3.9.1 DINET Database. The DINET system is composed of information files that are created by importing data from the following Government information systems:

- **DD350 File (DOD Individual Contracting Over $25K File)**. This file contains data on all purchases over $25,000 made by DOD during the past fiscal year. This data is based on the DD Form 350, Individual Contracting Action Report (Over $25,000), required by the DOD Federal Acquisition Regulation (FAR) Supplement to document purchases of commodities or services. The contractor data include location, type of business, and all applicable government regulations. The data is obtained from the Defense Logistics Agency (DLA).

- **CAGEFILE (Contractor and Government Entity File)**. This file contains data on past and current vendors as well as vendors

who wish to do business with DOD in the future. The data is obtained from DLA.

- **FDI File (Foreign Direct Investment File)**. This file contains data on all foreign direct investment transactions in the United States. Foreign direct investment is defined as direct, or indirect, ownership of 10 percent or more of the voting securities of an incorporated business enterprise, an equivalent interest in an unincorporated business enterprise, or a 10 percent, or more, interest in real property transactions. The data is obtained from the Office Trade Investment and Analysis, U.S. Department of Commerce.

- **FSCFILE (Federal Supply Classification File)**. This file contains the cross-references between the Federal Supply Classification (FSC) code and the Standard Industrial Classification (SIC) code. The FSC describes goods or services purchased by the government by generic categories. The data is obtained from DLA.

- **SICFILE (Standard Industrial Classification File)**. This file contains the cross-references between the Standard Industrial Classification (SIC) code and the Federal Supply Classification (FSC) code. The SIC codes describe industries. Covering the entire field of U.S. economic activity, they define industries in accordance with the composition and structure of the economy. The data is obtained from DLA.

- **CUSTOMS File.** This file contains data on duty free entry into the United States of purchases made by DOD and its contractors. It includes data on purchaser, product, country of origin, U.S. destination, quantity, and total value of the transaction. The data is obtained from DCASR - New York, a DLA activity.

- **DUTYPIIN File.** This file contains data to correlate with the DD350 File (all purchases over $25,000) to determine, by contract, all products coming from foreign sources. It identifies the purchaser as a prime or subcontractor and provides the total dollar value of the contract. This file and the CUSTOMS File form the basis for determining the portions of DOD purchases supplied by foreign sources. The data is obtained from DCASR - New York, a DLA activity.

- **FIPS File (Federal Information Processing Standard File).** This file contains data based on FIPS Number 55. The data include the location codes (state, county, place) used to identify the geographical location of industries and suppliers doing business with DOD. The data is obtained from the National Institute of Standards and Technology (NIST), formerly the National Bureau of Standards.

- **DUNSDOD (Data Universal Numbering System - DOD File).** This file contains data on vendors doing business with DOD; the

data in this file are accessed by using the DUNS number. This file is used to provide additional data on suppliers identified from the DD350 File. This file was developed by OIBA to support the DINET System.

- **QUADS Files (Quality Assurance Data Files)**. This is a set of 15 files that contain quality assurance data on defense contractor facilities. The information in these files are linked by the FSCM code. These files are maintained by DLA.

- **PEPM and PEPROC Files (Planned Emergency Producers Files)**. These files provide information from the Register of Planned Emergency Procedures (RPEP). The RPEP is a list of manufacturers of war material who are participants in DOD Industrial Preparedness Planning Program. The PEPM file contains data on these firms. The PEPROC contains the explanation for the codes used in the PEPM file. These files are maintained by DLA.

- **QCAL File (Qualified Contractor Access List)**. This file contains data on contractors certified to produce items based on unclassified critical military technology. The data is obtained from DLA.

- **Master Cross Reference List (MCRL) File**. This file contains information on national stock numbers for items routinely

supplied to DOD organizations. Also included in the file are the reference numbers, commercial part numbers, and CAGE data.

- **Plant Inventory File.** This file is provided by OJCS, J8, and contains data on approximately 31,000 manufacturing plants in the United States.

These files and their sources are listed in Figure 3-1. Data Sources for DINET.

DATA SOURCES FOR DINET

INFORMATION SOURCES	PROVIDING AGENCY
Current Acquisition Activity (DOD Form 350)	Defense Logistics Agency
Contractor and Government Entity File (CAGE)	Defense Logistics Agency
Register of Planned Emergency Producers (PEPM and PEPROC)	Defense Logistics Agency
Foreign Direct Investment Data Base (FDI)	Office of Trade Investment and Analysis Department of Commerce
Qualified Contractor Access List (QCAL)	Defense Logistics Agency
Industry Profiles and Production Data	Office of Business Analysis Department of Commerce
Quality Assurance Data Base (QUADS)	Defense Logistics Agency
Federal Information Processing Standards (FIPS)	National Institute of Standards and Technology Department of Commerce
Duty Free Entry Data - CUSTOMS	DCASR - New York Defense Logistics Agency
Duty-Free Entry Data - DUTYPIIN	DCASR - New York Defense Logistics Agency
DUNSDOD (Proprietary)	Office of Industrial Base Assessment Federal Supply Classification (FSC) Defense Logistics Agency
Standard Industrial Classification (SIC)	Defense Logistics Agency

Figure 3-1. Data Sources for DINET.

3.10 USER/SYSTEM INTERFACE.

Users access DINET by a stand-alone personal computer (PC) database updated off-line from the main DINET system or by a modem-equipped PC, communicating on-line with the central mainframe computer system on which the DINET database resides. The following two subsystems may be accessed:

- **Executive Display System (EDS).** The EDS is a prototype application designed to present summary level information on over 2500 major suppliers. The EDS format is intended to support crisis management operations with quickly accessible data on products supporting weapons systems and equipment. It is designed as a PC-based application with interactive software containing pull-down menus and graphic presentations. It is limited to a predefined subset of the DINET database that must be updated off-line from the main DINET system.

- **Analyst Query System (AQS).** The AQS is designed to present detailed DINET information to the industrial planner and to the DOD acquisition/industrial base action officer.

3.11 CAPABILITIES OF DINET.

The following DINET modules have been developed as the Analyst Query System (AQS):

3.11.1 **Acquisition Module.** This module is the core of the AQS. The main menu for this module is shown in Figure 3-2, Acquisition Module Menu.

```
DINET --ACQUISITION MODULE -- MAIN MENU

 1 - Current Production Acquisition        2 - Alternative Product Suppliers
 3 - Foreign Military Sales Info           4 - SICs in Order of DOD Preference
 5 - Foreign Direct Investment Queries     6 - Weapons System Query
 7 - Canadian Supplier Profile             8 - NATO Country Query
 9 - Contract Number Query                10 - Corporate Information Query by SIC
11 - Supplier Information Query           12 - Duty Free Information by TSUSA Code
13 - Asian Country Query                  14 - MOU Country Query
15 - Geographic Query                     16 - Contract & Government Entity Query
                                          17 - Exit
```

Figure 3-2. Acquisition Module Menu

3.11.2 **Merger and Acquisition Module.** This module is to provides information on current mergers and acquisition of U.S. manufacturing firms. Its main menu is shown in Figure 3-3, Merger and Acquisition Module Menu.

```
DINET -- Merger and Acquisition Module -- Main Menu

1 - Acquisition Firm Profile
2 - Target Firm Profile
3 - Acquisition Firm and Target Firm Relationship
4 - Exit
```

Figure 3-3. Merger and Acquisition Module Menu.

3.11.3 **Component Module.** This module, currently developed in prototype, provides preliminary visibility of detailed products. It contains information on the suppliers of over 13 million components, including national stock number (NSN), item name, CAGE

number, and reference number. A limited capability exists to relate federal supply classification (FSC) level information on the procurement of products with more specific logistics information at the NSN or commercial part number level.

3.11.4 Report Generator Module. This module provides a selection of reports pre-formatted by DINET analysts in anticipation of user requirements. The main menu for this module is shown in Figure 3-4, Report Generator Menu.

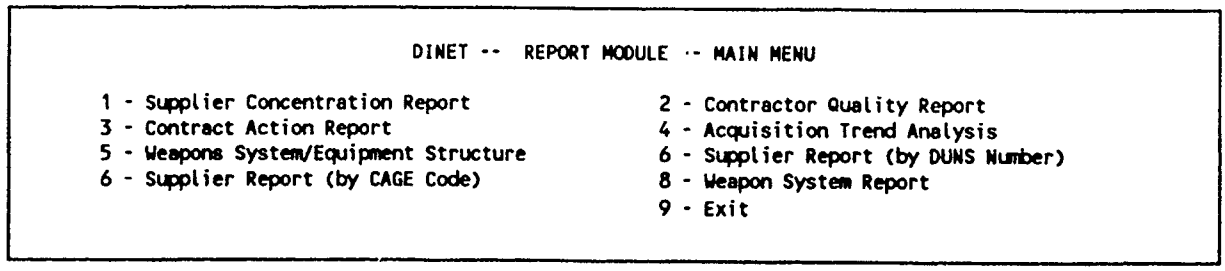

Figure 3-4. Report Generator Menu.

3.11.5 Summary Module. This module provides summary reports as the core of the Executive Display System (EDS). The main menu for this module is shown in Figure 3-5, Summary Module Menu.

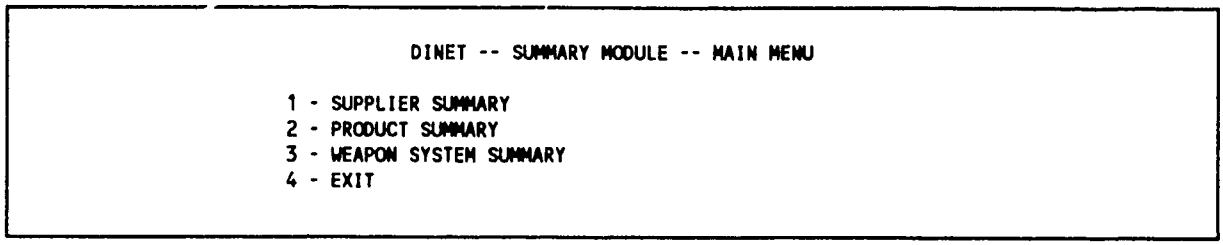

Figure 3-5. Summary Module Menu.

3.12 DESCRIPTION OF DATA.

3.12.1 Data Access. All data in the DINET database are UNCLASSIFIED.

3.13 SYSTEM AUTOMATION.

3.13.1 System Software. Development of the DINET system software is being carried out by the Defense Logistics Agency.

3.13.2 System Database. The DINET database consists of a number of files loaded with data imported from DLA and other Government systems.

3.13.3 System Hardware. The DINET Information System resides in an IBM 3033 mainframe computer. It uses a Computer Corporation of America Model 204 database management system. The host mainframe computer is operated by the Defense Logistics Agency at Cameron Station, Alexandria, Virginia.

3.13.4 **User Access Requirements.** In order to access the DINET system, users must have the following capabilities:

- Personal Computer System (IBM PC or compatible, Apple, Macintosh, etc.),
- Modem (Hayes, Maxwell, etc.),
- Communication Software Package (CrossTalk, Mirror II, Procomm, etc.), and
- Wordprocessing Package (MultiMate, WordPerfect, Microsoft Word, etc.).

3.14 JOINT/INTER-AGENCY/COMBINED DATA PRODUCTION.

3.14.1 **Manufacturing Technical Data Workshop.** This workshop is being planned to survey the Military Services's and DLA's capabilities in the area of providing industrial base data for crisis management operations. The objective of this workshop is to develop an outline for a strategy to call on the entire DOD community for information required by the industrial base staff planner.

3.14.2 **North American Defense Industrial Base Organization (NADIBO).** NADIBO is a joint Canadian-U.S. organization designed to ensure Industrial Preparedness Planning remains a visible and

vital element of the goal to strength the North American defense industrial base.

- o **Data Committee.** This NADIBO committee has the overall mission to promote the exchange of data between the nations' military services, government agencies and industries to improve industrial responsiveness and the effectiveness of industrial base analyses.

3.15 CURRENT STATUS.

3.15.1 The House of Representatives Conference Report. This conference report authorizing appropriations to DOD for fiscal year 1990 states that "the conferees agree that the two existing DOD programs, the Defense Industrial Network (DINET) and the Defense Intelligence Agency's Project SOCRATES, should be consolidated with the Defense Industrial Base Office to support research, development and acquisition activities of the Under Secretary of Defense for Acquisition. The conferees direct that funding for consolidation and implementation of defense industrial information activities be taken from funds appropriated to the Department of Defense in support of the Under Secretary of Defense for Acquisition."

3.15.2 Industry Bearing Study. A recent initiative by the DINET project office to develop industry-specific mini-databases to support OSD users has identified four specific areas as requiring special and detailed attention: bearings, fasteners, machine

tools, and semi-conductors. Data extracted from the DINET database for each of these industries is to be augmented by data generated by a DINET support contractor from open sources. This added data covers companies that do not conduct business with DOD but have the capability to produce the products in the special area. This data is then entered into and maintained on, a PC-based database (using DBaseIII Plus software) for use by the industrial base staff planner. A separate published report will be prepared during the initial compilation of the industry data. To date, only the Industry Bearing Study has been completed.

3.15.3 **Redefinition of the Project**. In response to the congressional directive, the DINET project is currently undergoing redefinition to ensure that it is responsive to real user requirements.

SECTION 4 - ANALYSIS OF SOCRATES AND DINET

4.1 INTRODUCTION.

The development of SOCRATES and DINET were both initiated to track the development and maintenance of a comprehensive, competitive U.S. industrial base necessary to ensure economic and politico-military security. Project SOCRATES was initiated in response to the need to restrict the export of goods and technology that could aid the military potential of other countries to the detriment of United States national security. DINET was initiated in response to a need to assess the production base essential to the acquisition of critical weapons systems and determine the extent of U.S. dependence upon foreign sourcing for components at the subtier level.

4.2 COMPARISON OF THE SYSTEMS.

4.2.1 SOCRATES and DINET Missions. The missions of SOCRATES and DINET are different but complementary. Taken together, the missions of the two systems are to support the entire spectrum of focused basic and advanced research and development, industrial base improvement and protection, and cooperative and counter-technology transfer programs.

SOCRATES' mission is to assess military critical technologies on a global basis in support of technology planning. It focuses in on military critical technologies, which are a finite set of technologies each sharply defined in terms of specific end items, key components and key parameters used to identify potential data collection and technology exploitation requirements. DINET's mission is to collect a wide variety of existing procurement, supply, and services data on the U.S./Canadian industrial base. This data is made available for general use by the OSD staff officer to support his industrial base planning or contingency operations planning efforts.

4.2.2 Objectives of the Systems. SOCRATES' principle objective is rooted in the Export Administration Act of 1979, which sought to restrict the export of U.S. goods and technology that could aid the military potential of other countries to the detriment of U.S. national security. Pursuit of this objective led to development of an automated system and the systematic collection of foreign technology data, which was soon recognized as being able to meet other objectives. Two new, important objectives were identified: (1) enhancing the U.S. technology base by reverse technology transfer, and (2) decreasing cost and procurement time of U.S. military hardware by optimized use of foreign technological expertise and capacity through techniques such as joint ventures and cooperative development.

DINET's primary objective is to provide data to support industrial base investment planning and to track existing capabilities in support of contingency planning emergency response (surge) operations. The DINET program secondary objectives include providing data for the planning, programming and budgeting (PPBS) process and for analyzing trade-offs between stockpiling of war reserves and peacetime production capabilities.

Both systems share a common purpose, which is to provide their users within the Department of Defense with the data essential for analysis and informed decisionmaking. Both systems view their "typical" user as a staff member concerned with identifying critical technologies and industrial capabilities in order to plan optimum investment strategies in future R&D and mantech efforts, and to identify technology areas and/or specific programs in which international cooperation could benefit overall U.S. security.

4.2.3 **Users of the Systems.** SOCRATES and DINET do not have established users who routinely use their products on a continuous or scheduled basis. Both project offices have defined specific government communities as potential users of their systems. Of the five communities each system has identified, three are common to both systems. Two communities are unique to each system. However, within these communities, it is difficult to identify specific, routine users.

Both project offices have had only limited success in making their systems available to the full extent of their identified user communities. This difficulty appears to result from inadequate resources being available to allocate to user outreach activities, and to the fact that the systems have not been strongly supported within OSD. The project offices are embedded in organizations that have partly incompatible primary missions. Resourcing of the projects have been held to a minimum in terms of sufficient and appropriate personnel, facilities, and operational funding. Despite continued recognition by OSD and Congress of the need for a comprehensive technology and industrial base information system, no formal program to develop and maintain such a system has been created. There is no DOD directive on this subject, and there is no readily available staff guide or DOD manual available f' the staff planner to learn of the support available and how to access it. Many staff officers, especially frequently rotated uniformed officers, are unaware the Project SOCRATES office and the DINET project office are ready to help satisfy his industrial base and technology data requirements.

When called upon to provide support, both projects have been successful in supporting user data requirements. Most notably, SOCRATES data on High Definition Television (HDTV) has been used by the Senate Armed Services Subcommittee on Defense Industry and Technology, and DINET data on critical defense contractors located within the area effected by the recent earthquakes in California

was used by the Federal Emergency Management Agency (FEMA) during the crisis management operations.

4.2.4 **Data Collection Methodologies**. SOCRATES and DINET employ extremely different data collection methodology. In fact, it is the data collection methodology that most distinguishes each system. SOCRATES targets and directs data collection based on the unique technology outline, which defines the scope of the data collection effort. The system controls the data collection effort by using its own technology experts and data collection activities, supplemented by outside experts when necessary. This deep involvement of SOCRATES analysts in developing data collection strategies as well as performing initial evaluation of the data as it comes in gives them a solid understanding of the nature of their data. The users must help provide target technology areas of greatest interest to prevent over-tasking or poor task prioritization of the SOCRATES collection efforts.

DINET, on the other hand, defines its data collection efforts in terms of determining the usefulness of data collected for other purposes by other DOD systems. It depends on the effectiveness of the data collection efforts supporting primary logistics and procurement databases throughout the U.S. and Canadian Governments to capture necessary data. Data identified as useful is imported from these other systems into a broadly defined DINET database. DINET does not direct or control the primary data collection effort. The DINET analyst must become an expert on the range of

data bases available, including the types, qualities, and extent of data they contain, in order to adequately assist DINET users. DINET needs to have continuous communication with the user community to define the type of data the decisionmaker and staff planner will need for various uses. A breakdown in communications will result in a continuing inability of the DINET project office to clearly define the scope, detail, and timeliness of data required within the system.

Data collection is the most costly aspect of the operation and maintenance of both systems. However, the current allocation of resources for each project office appears to be inadequate to ensure the continuous regular updating of the databases.

4.2.5 **Reliability and Validity of the Data.** Validity is the ability of the data to accurately supports what it purports to in a usable form. Reliability is defined as the ability to ensure the continued validity of the data through updates to existing data and the collection of additional pertinent data. The SOCRATES data is tied to a "snapshot" of the target technology. To ensure continued validity and reliability of the data, a new "snapshot" must be taken periodically. The SOCRATES analysis product "years ahead/years behind" requires that the system update each technology in the database annually. However, due to cost of this updating effort and insufficient funding over an extended period, the SOCRATES project office has not been able to update all the data on the technologies they have assessed to date. It is possible,

of course, that some of the data collected has not gone out of date, but unless the data is regularly revalidated and updated as necessary, the overall technology assessment must be used carefully.

DINET data is primarily derived from the procurement, supply, and services world, and is largely historical data initially captured for procurement accounting. Its validity is based on the ability of the DINET analyst to understand and qualify the data, and its reliability is based on the integrity of the primary data collection systems to capture good data. The DINET systems analysts must have a clear and complete understanding of how the data is being collected, processed, and used by those systems. The validity and reliability of this data is increased by cross-checking and careful qualification of the data by DINET analyst and users. DINET receives massive infusions of data from a wide array of sources. While this volume turns DINET into a virtual industrial data shopping center, it creates a sizeable data configuration management and quality assurance problem. Despite the varying formats, quality, timeliness, and terms of reference used by the primary data bases, the DINET project office does not have a full time database administrator to keep a constant vigil on the quality of this data.

4.2.6 System Automation. SOCRATES is a PC-based system using readily available commercial software. However, the automated system is directly accessible only to the SOCRATES analysts. The

system is not yet developed to the point where it is directly accessible by an end user. Users interface with the system by identifying requirements for hard copy reports.

DINET is resident on a mainframe computer located at the Defense Logistics Agency (DLA) at Cameron Station, Alexandria, Virginia. Remote users can access the system with their own PCs through a dial-up communications link using commercial software and an assigned password. DINET analysts or remote users log onto the system and call up interactive software to access the database, much like a commercial on-line data service. The current software allows screen generated reports, but in order to obtain hard copy reports, the data must be down-loaded as an ASCII file and then converted for manipulation by the user's word processing software.

4.2.7 Reports/User Interfaces. SOCRATES has a limited number of "canned" reports, but they are comprehensive, well defined and clearly formatted. At this time, SOCRATES reports are the primary method of user interface. The user may be provided the Technology Outline, the Technology Status Report or the Technology Assessment Report. It is possible for the technology data to be provided to the user by floppy disk to generate these reports; however, the user will still not be able to manipulate the data. The capability for the user to directly manipulate the data, whether on-line or after a download, has not yet been developed.

The DINET software generates interactive menus for selecting data or for requesting on-screen pre-formatted reports. The menu screen formats in the analyst query system have a early 1980s look, and require updating to make them clearer and more user friendly. Hard copy reports can only be provided to the user after the required data is downloaded from the mainframe database to the local PC and then reformatted by the DINET analyst or an experience user employing a word processing system. The user cannot directly request hard copy from the system.

The DINET project needs to develop a clearly defined philosophy concerning the nature of their objective system user interface. This must be preceded by a decision as to whether outside users will be given direct access to hunt through the database in search of the desired data, or whether to have users state their information requirements and have the data generated and formatted into a report by the DINET analyst in a manner similar to that of SOCRATES. The immediacy and direct access of the first option is appealing in terms of faster access for the remote user and a reduced burden on the DINET system operators. However, such a user-operated interface in a database filled with diverse data of differing formats, varying quality, and uncertain timeliness demands expert knowledge of the validity, reliability and source of the data. If DINET is to continue to work on a direct user-access basis, access procedures must be better defined and the system must provide more extensive and "intelligent" on-line help and data evaluation. The DINET system should also provide remote

users a means of downloading formatted reports rather than generating massive ASCII files which must then be reformatted by the end user.

Important, time-critical decisions with significant long-term economic and military impact may be made based on the data provide by SOCRATES and DINET. Reports and user interfaces must be well defined, and the timeliness and completeness of the sampling used to collect the data should be made available to the end users. Regardless of the accessing philosophy used, both systems need basic computer application tools such as a detailed user's guide and data element dictionary to explain the system.

As a final note on the subject of reports, the SOCRATES and DINET project offices have had the need to provide highly detailed narrative analyses in conjunction with their formatted data output reports. For example, when the SOCRATES project office prepared the report to Congress on HDTV, the standard reports were introduced with expert narrative analyses contained in a clearly defined, fully documented, bound report. The DINET project office recently produced a similarly formal Industry Bearing Study. This study contained a detailed narrative analysis to support the formatted data output report.

In both cases, the project offices had to take on the additional responsibility of developing a staff action package in addition to their usual data reports and information systems support. That is,

they provided more than data to users; they provided completed staff reports incorporating analyses and recommendations. This requirement places great demands on the existing resources in the project offices.

4.2.8 Organizations. Currently, the Project SOCRATES office is an activity belonging to a branch of Scientific and Technical Intelligence Directorate of the Defense Intelligence Agency. The DINET project office is embedded in the OSD Office of Industrial Base Assessment (OIBA). Consolidation of both offices and systems was proposed in the USD(A)'s report, and a House conference report stated that the conferees agreed to this idea and authorized the funding for this consolidation. It is important that this consolidation be accomplished with an aim of developing an organization better suited for supporting the OSD need for technology and industrial base data. A consolidated organization will make better use of resources devoted to the effort of collecting and preparing the data. It will establish an organization that has potential for greater visibility among the user communities and for more efficiency in assisting the user in meeting his requirements. The current project offices are analogous to a "mom and pop" general store rather than a modern department store. Their ability to rapidly respond to changing requirements are thus limited. The staffs in these offices have taken limited resources and have built excellent baseline systems. These systems should now be properly resourced and aggressively

managed in order to form a more comprehensive, more accessible DOD Technology and Industrial Base Information Program.

4.2.9 Rationalization of Personnel Functions. The functions of the personnel in a consolidated office will have to be rationalized. Currently, the personnel assigned to these organizations work at five distinct levels: ADP system developers; ADP system operators; data analysts; and functional requirement specialists performing user interface; and staff action officers able to prepare complete reports including substantive analysis and recommendations.

(1) As ADP system developers, the personnel in both offices were tasked to develop the specifications for their data processing systems, software packages, user interfaces, and report generators. (2) As ADP system operators, they have the ongoing requirement of understanding the technical aspects of how to operate, maintain, and perform limited upgrades of the hardware and software once they have been installed. (3) As data analysts, they are required to be analytical data specialists able to develop a data collection plan, whether for direct accession or for searching an array of other data bases and finding the appropriate data. Additionally, once the data is developed or imported from industrial sources or other Government systems, it must be reformatted into a system-standard format using established file, record, and field parameters and variables. (4) As functional requirements analysts, they must be able to translate staff users' stated needs into

meaningful searches through the database and prepare appropriately formatted output reports. (5) Finally, they must act as staff action officers by being required to prepare complete staff reports from the data generated from their systems. The wide range of capabilities expected of these project offices indicates that simply combining the two existing offices into a single office will not provide the necessary range of expertise. An information system office with such a wide range of responsibilities requires a carefully structured organization.

4.2.10 Project Management. The SOCRATES and DINET projects have had high visibility during the past two years, since publication of the USD(A)'s report. However, neither project has a well defined charter defining mission, objectives or responsibilities. A formal functional description for the SOCRATES system was developed at the initiation of the project; however, there is no formal management plan that presents the mission and objectives of the project. The DINET project office prepared a mission element needs statement (MENS); however, there has been no action on this document. DINET also does not have a management plan that presents the mission and objectives of the projects. Upon consolidation of the systems, there is a need to take advantage of the current climate for supporting the two systems and develop a formal management plan that clear states the mission and objective of a technology and industrial base information system. This document will provide direction for the two systems and can by used to

justify an adequate, realistic funding base for the technology and industrial base information system.

4.2.11 User Groups and Joint and Combined Data Production Groups. The SOCRATES and DINET project offices have defined user's groups, but neither project has actually employed these groups or assembled them with regularity. User's groups serve several important functions necessary to ensure the relevance and responsiveness of the systems to evolving user needs as the users become more aware of the potential for the systems to support them. Specifically, database user's groups are used to validate the general requirement for existence of the systems, establish continuous communications with the staff offices, and develop the management plan that provides the direction for the systems. They must meet frequently enough to ensure that the participants gain an understanding of the project's organization, long term goals, and objectives as well as an understanding of how to query the system. The project must get the user's groups to identify both generic and specific requirements in order to continually refine the mission and functional priorities of the project.

As is the case with many database systems, the users are also a major source of the data residing in the system. There is a requirement to obtain data from the Military Services and from the Canadian Government; therefore, it is necessary to develop continuous liaison with these bodies. A joint and combined data production group that meets on a consistent basis would be

invaluable to the systems. Such regular contact allows the completion of the database cycle from the users' stated requirements to system objectives to system data requirements and back to the user for data and resource support.

4.2.12 Training. Currently, there is no formal or periodic training program established for either system. Training is done on an ad hoc basis. A formal documented Project SOCRATES briefing is available for an overview of the system; however, this briefing does not constitute a training session that gives the staff planner enough information with which to task the SOCRATES system. While DINET expects the user to work directly with the system, rather than submitting requirements to the project office, DINET does not even have a briefing comparable to SOCRATES'. Training requirements have been largely unsatisfied. Training is needed at several levels. An overall orientation course on both programs similar to the current SOCRATES briefing should be developed for presentation to newly arrived OSD staff officers and other appropriate government agency staff personnel. A similar orientation briefing is required for presentation at the Service schools and colleges, especially the Industrial College of the Armed Forces (ICAF). A more extensive "hands-on" user's course is also needed, especially for DINET. This course would present the capabilities of the system in terms of the types of data available in the database and the methods for accessing, analyzing, and formatting this data.

4.2.13 Exercises. DINET was used in an JCS exercise in 1988. This was a good test of the DINET Analyst Query System, and the findings during the exercise stimulated evolutionary development of the DINET system. The DINET system must continue to participate in this type of exercise to keep the system visible to user and to refine user requirements. SOCRATES does not lend itself for exercise use as it is currently designed. However, greater use of the system by a wider range of users would tend to exercise the flexibility and responsiveness of the SOCRATES database.

SECTION 5 - CONCLUSIONS

5.1 CONCLUSIONS.

The following paragraphs present conclusions that are based on the analysis of the SOCRATES and DINET systems contained in Section 4 of this study.

5.1.1 SOCRATES and DINET are useful and complementary systems. They have been developed to meet different requirements relative to technology and industrial base programs. SOCRATES focuses on foreign technological capabilities and compares them to U.S. capabilities down to the sub-system level. DINET emphasizes cataloging U.S. and Canadian industrial base and technology development capabilities. Together, they cover most of the needs of the ODUSD (I&IP) staff and other Government users.

5.1.2 The greatest weakness of both systems is primarily a matter of direction, organization, and resources rather than a question of overlapping missions, functions, or databases. SOCRATES and DINET have been developed with a minimum of resources over the past few years and are now on the threshold of maturity.

5.1.3 A consolidated DOD Technology and Industrial Base Information Program should be established to more effectively serve the user communities and to more efficiently use the limited resources

allocated for the development and operations of both systems. This should lead to an organization led by a single Chief, DOD Technology and Industrial Base Information Systems, supported by a consolidated staff. He would focus existing and future projects through a distinct service organization, and would be responsible for effective planning, programming, and budgeting of resources with the goal of controlling growth in the directions of greater accuracy, greater comprehensiveness, and greater responsiveness to user needs.

5.1.4 The DOD Technology and Industrial Base Information Systems, explicitly including but not limited to SOCRATES and DINET, should be institutionalized as a program through a formal charter such as a DOD Directive. This DOD Directive would specify organizational missions, objectives, functions and responsibilities, as well as the responsibilities of other DoD agencies and the Services to provide appropriate data and resource support in accordance with existing Congressional and OSD guidance.

5.1.5 A formal management plan should be developed to provide direction to the program, to define and coordinate responsibilities, and to outline development and configuration maintenance procedures. It is also needed as a basis for developing a DOD Technology and Industrial Base Information Program mission element needs statement (MENS) to be used to establish program funding.

5.1.6 Action is needed to increase awareness of SOCRATES and DINET products to Government decision-makers and staff planners both within and outside DOD. As an initial step, the consolidated DOD Technology and Industrial Base Information Program organization should be relocated into the Pentagon to permit immediate accessibility for OSD staff officers. This would facilitate "walk-in" service for primary users and permit more routine communications with and assistance to the OSD staff.

5.1.7 The SOCRATES and DINET systems (and other systems that may eventually be included) need to be better documented with functional descriptions, system specifications, data element dictionaries, and operators and users guides. This will provide the basis for more streamlined user access to the systems, and more effective configuration management of the systems.

5.1.8 A staff guide to the DOD Technology and Industrial Base Information Systems needs to be developed as a ready reference for OSD staff officers and other authorized users. It should incorporate information describing the organization, the systems supported and their capabilities, and various on-line and off-line methods for accessing information about the SOCRATES and DINET systems. This document could be in the form of a DOD Manual made available throughout DOD and to other Government users.

5.1.9 The users of the SOCRATES and DINET systems must be encouraged to validate the system requirements and data require-

ments. Every effort must be made to test the responsiveness of the DOD Technology and Industrial Base Information Systems to dynamic, contingency-driven requirements by participating in joint staff exercises, budget cycle support, and preparation of Congressional testimony. This will lead to a more responsive and more widely appreciated system.

5.1.10 User groups must be created to ensure that valid data product requirements are being communicated to the program management staff, and that resource and data input requirements are reaching appropriate users. A separate user group could be established for each system. Joint and combined data production groups are also required. These groups would have to meet with frequency that make communications between the project office and the staff user reliable and routine. The minimum number of meetings by such groups should be twice per year to ensurc consistent participation.

5.1.11 An orientation and training plan for the DOD Technology and Industrial Base Information Systems must be developed that outlines orientation courses for Service staff officer level schools and colleges, staff officer orientation training, and detailed training for specific user communities.

SECTION 6 - RECOMMENDATIONS

6.1 RECOMMENDATIONS.

The following paragraphs present recommendations that the SOCRATES and DINET organizations may wish to consider when the offices are consolidated. (See Figure 6-1, Recommended Actions.) These recommendations are based on assumption of zero combined budget growth for an DOD Technology and Industrial Base Information Systems office compared to its predecessor project offices. Such financial constraints increase the importance of a more coordinated and focused approach for information system management than has been the case in the past. Even with improved management, resource constraints may continue to limit the extent to which the systems can be further developed.

6.1.1 Develop a consolidated organizational structure and create a Office of DOD Technology and Industrial Base Information Systems using existing SOCRATES and DINET resources.

6.1.2 Create a position of "Chief, DOD Technology and Industrial Base Information Systems," out of existing SOCRATES/DINET resources.

6.1.3 Develop a DOD Directive on the DOD Technology and Industrial Base Information Program that will:

- Establish a consolidated mission,

- Identify internal functions and responsibilities, and

- Identify user and upper echelon functions and responsibilities.

6.1.4 Move the Office of Technology and Industrial Base Information Systems into the Pentagon for improved visibility and staff access (i.e, "walkup service").

6.1.5 Develop a DOD staff guide (DOD Manual) to the DOD Technology and Industrial Base Information Systems.

6.1.6 Develop a formal comprehensive management plan for the DOD Technology and Industrial Base Information Program to provide direction to the program, to defined and coordinate responsibilities, and to outline development and configuration management procedures.

6.1.7 Develop an Mission Element Needs Statement (MENS) for the DOD Technology and Industrial Base Information Program and establish a funding base for the consolidated program.

6.1.8 Validate OSD, joint, combined and inter-government agencies requirements for SOCRATES and DINET.

6.1.9 Create local user groups that meet at a minimum of twice each year to establish requirements and communications with the user communities.

6.1.10 Create a joint/inter-government agencies data production working group that meets twice each year to develop to a develop data exchange program.

6.1.11 Create a combined data production working group with Canada or use the NADIBO Data Committee will fulfill this need.

6.1.12 Develop system documentation to ensure orderly configuration management of each system - perhaps a modified version of the documentation described in the Mil-Standard.

[illegible] consolidate automation support in order to optimize the expenditure for resources.

6.1.14 Establish a training programs to:

- Present an regularly scheduled orientation of the systems to newly assigned OSD executive and staff-level officers,
- Present an orientation of the system to students at Service schools and staff/war colleges (especially, ICAF), and
- Present a detailed hands-on course to staff users.

6.1.15 Use the system in major joint exercises, program justification development, and to respond to Congressional inquiries.

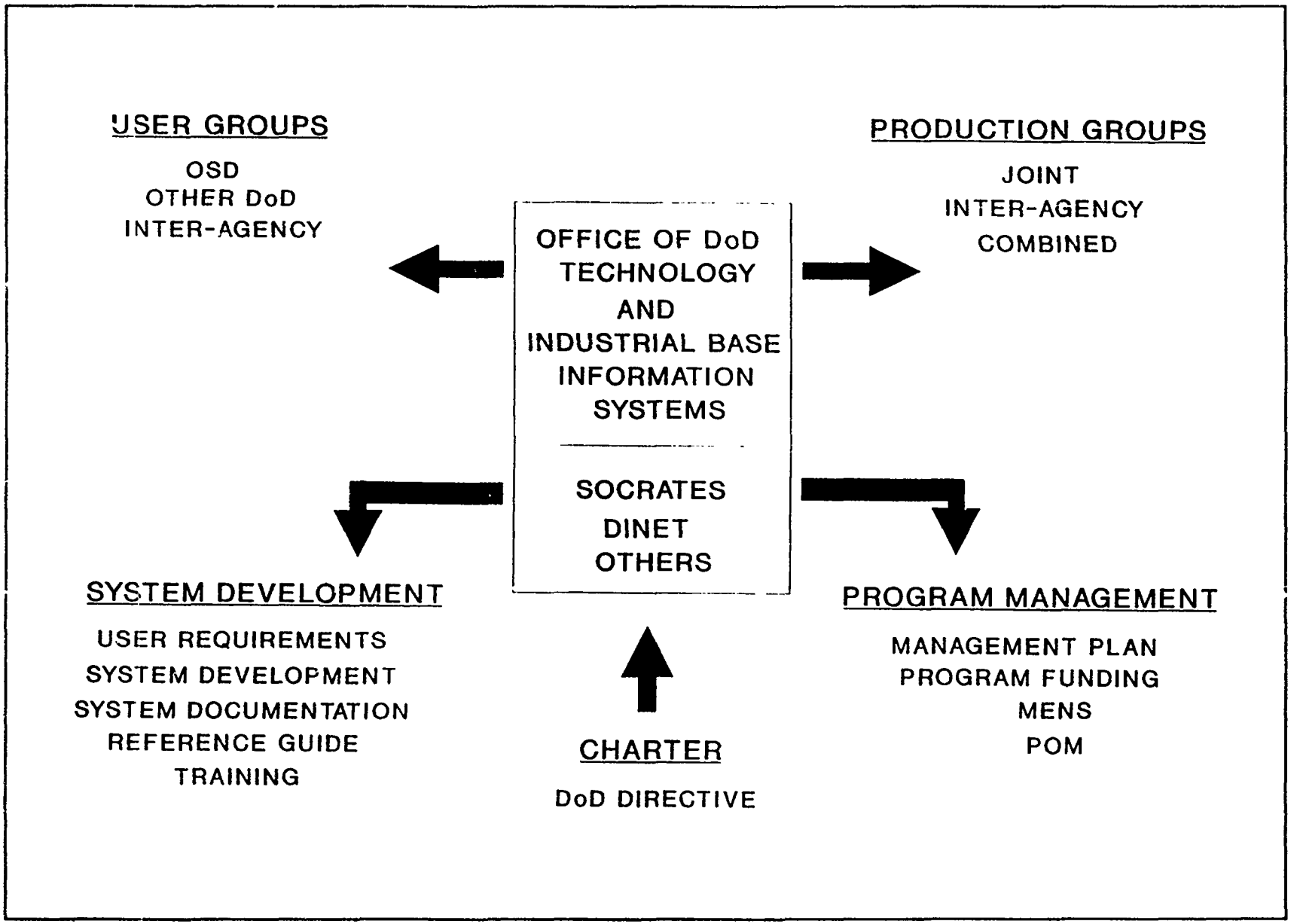

Figure 6-1. Recommended Actions.

APPENDICES

APPENDIX A

EXTRACT OF A REPORT

BY THE UNDER SECRETARY OF DEFENSE (ACQUISITION)

Bolstering Defense Industrial Competitiveness

Analytic Capability to Develop Defense Perspectives

Conclusion

The Department of Defense has not had adequate institutional mechanisms for maintaining awareness of either technology or industry trends, nor for understanding, analyzing, or assessing the national and international issues that surround the questions of American technological or industrial competitiveness.

Discussion

In order to guide defense policy more effectively, the Secretary of Defense and the Under Secretary of Defense (Acquisition) require coherent, dedicated data acquisition and analysis support not currently available to them. In developing this capability, the Department should recognize existing programs which might be adapted to address this shortfall. Two such programs, the Defense Industrial Network and Project SOCRATES, that are now in their formative stages, are being established to deal with specific problem areas in manufacturing and technology, but might economically be adapted to fill this need.

Recommendation

The Department of Defense should establish permanent, institutional mechanisms to acquire, analyze, and assess manufacturing and technology data and provide the principal officers of the Department cogent, objective advice with respect to defense issues that involve the performance of the United States industrial base. The Defense Industrial Network and the Defense Intelligence Agency's Project SOCRATES should be merged and adapted to fill this requirement for data.

APPENDIX B

STATEMENT OF MR. FRANK C. CONAHAN, ASSISTANT COMPTROLLER GENERAL

NATIONAL SECURITY AND INTERNATIONAL AFFAIRS DIVISION

U.S. GENERAL ACCOUNTING OFFICE (GAO)

Statement of Mr. Frank C. Conahan before the House Subcommittee on Legislation and National Security, Committee on Government Operations, Subject: Adequacy of Official Information on the U.S. Defense Industrial Base, date: July 18, 1989.

United States General Accounting Office

GAO Testimony

For Release
on Delivery
Expected at
10:00 a.m. EST
Tuesday,
July 18, 1989

Adequacy of Official Information on the U.S. Defense Industrial Base

Statement of
Frank C. Conahan, Assistant Comptroller General
National Security and International Affairs
Division

Before the
Subcommittee on Legislation and National Security
Committee on Government Operations
House of Representatives

Mr. Chairman and Members of the Subcommittee:

We appreciate this opportunity to appear before the Subcommittee today to discuss selected aspects of the federal government's data collection and coordination efforts related to the U.S. defense industrial base.

In recent years, a number of studies have surfaced an increasing concern about a growing dependence on foreign sources for materials and components for our weapons systems. Our own earlier work on production capabilities and constraints in the defense industrial base demonstrated this dependence with respect to several weapons programs[1]. Other reports cite similar problems. For example, a Joint Logistics Commanders report, A Study of the Effect of Foreign Dependency, prepared in 1986, reviewed 13 weapon systems and found foreign dependencies in 8 of them with severe problems in 6. According to this study, these dependencies could result in a total cut-off of the production of these items as early as 2 months into a war mobilization effort for a period lasting from 6 to 14 months.

In July 1988, the Under Secretary of Defense for Acquisition's report, Bolstering Defense Industrial Competitiveness, said that the Nation is no longer self-sufficient in all essential materials and industries required to maintain a strong national defense. In October 1988, the Defense Science Board noted that globalization of defense markets has resulted in weapon systems that are dependent on foreign sources not only for raw materials but also for manufactured products. According to the Board, the most visible examples of this dependence include tactical missiles, such as the TOW, Maverick, Sidewinder, and Sparrow. The Board also stated that items such as these missiles would be in the greatest demand in a conventional war, and most at risk,

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[1]Assessing Production Capabilities and Constraints in the Defense Industrial Base (GAO/PEMD-85-3, Apr. 4, 1985).

because of dependency on foreign sources. The Board recommended the purchase of an eighteen month buffer stock for critical foreign sourced components for prime contractors' work in process.

Although evidence of dependence regarding certain weapon systems exists, it is not possible to measure the impact or extent of dependence because the Department of Defense (DOD) has no reliable system to identify foreign dependencies in technologies essential to defense production.

Some efforts underway are intended to systematically collect and analyze industrial base data, including the extent of foreign dependency. However, they have been slow in coming to fruition and/or have not been adequately justified to receive necessary support. Also, there is no system in place to assist policy-makers in being aware of or gaining access to information on existing data bases and models on industrial base matters.

DOD's current ad hoc approach to defense industrial base data collection and analysis can provide information on general industry sectors and foreign dependencies through special studies. However, the ad hoc approach is inefficient and of limited effectiveness because it (1) provides only limited visibility into foreign dependencies at subtier industries, (2) does not facilitate the identification of acquisition strategies, and (3) does not shorten DOD's decisionmaking process for acquiring weapon systems, subsystems, and components by facilitating market research as a more systematic approach would. DOD officials stated that reliance on ad hoc data collection, which is based on varying methodologies, puts DOD in a reactive role and limits its ability to identify trends in critical industrial sectors.

My testimony today will cover (1) DOD efforts underway to improve data collection on and analysis of the defense industrial base, including foreign dependencies, (2) federal agencies' efforts to address the need for better coordination regarding the data bases and models that are available, and that decisionmakers should be aware of, on industrial base matters, and (3) agency views on significant data related problems regarding the defense industrial base. I will then discuss consultation procedures between the Departments of Defense and Commerce regarding Memorandums of Understanding (MOU) negotiations.

EFFORTS UNDERWAY

Two major efforts, the Defense Industrial Network (DINET) and the Army/Census Bureau project, are intended to improve data collection and analysis of the defense industrial base, including foreign dependencies. Other efforts, when completed, are also intended to provide visibility into foreign dependencies at lower tier levels. These include a review of the "Subcontract Report of Foreign Purchases," DD Form 2139, and a statutorily directed review of DOD's industrial production base analysis process, one aspect of which will address data collection on foreign sourcing.

DINET

The DINET project is an effort to provide accurate assessments of the production base essential to critical weapon systems and achieve a more responsive, competitive industrial base. DINET is intended to provide information and analysis on acquisition, trade, foreign direct investment, current economic trends, critical military technology, industrial capabilities and military requirements data, and reliance on foreign sources. DINET is also intended to integrate data available from DOD and other federal agencies in order to provide analysts, planners, and decisionmakers with (1) access to more complete, accurate,

and timely information regarding the industrial base, (2) a perspective on DOD's total industrial requirements, (3) the ability to relate end item requirements to components, parts, and materials, (4) better visibility into the critical subtier levels of production, and (5) identification of foreign vulnerabilities (a source of supply whose lack of availability jeopardizes national security by precluding the production, or significantly reducing the capability, of a critical weapon system).

The DINET project started in 1985 and is expected to be completed in 1993. DINET's total estimated cost ranges from $7 million to $29 million, depending on the alternatives selected. DINET has been funded to date through special studies for a total of $1.4 million.

DINET project officials cited constraints that DINET needs to overcome regarding the collection of data. That is, data collection is difficult and time-consuming because (1) DOD components, including the three military services, have varying formats, standards, and definitions for the data and (2) data sources for industrial capacity and foreign dependency at the plant level are either non-existent or fragmented among many sources whose reliability is questionable. Another constraint cited is the differences in the services' approaches and data bases regarding mobilization. Project officials said DOD cannot fulfill its mission to assure the maintenance of adequate industrial base capabilities to meet peacetime and emergency military needs without a system such as DINET.

Army/Census Bureau Project

DOD identified another recent attempt at systematic data collection--the Army/Census Bureau survey. This effort was intended, among other things, to obtain information on U.S. manufacturers' ability to expand their production capacity and

on foreign dependency. It was also intended to provide statistically valid information and be linked to DINET. The Army, acting on DOD's behalf, agreed with the Census Bureau in 1987 to add a supplement to Census' Shipments to Federal Government Agencies survey, which is conducted every five years. The survey is sent to a sample of approximately 7,000 establishments in 84 U.S. industries. The supplement was intended to obtain broad information about the prevalence of foreign sourcing for DOD procurements. DOD officials stated that this survey would (1) minimize the need for special studies by federal agencies, (2) give visibility not just to a relatively few critical industries but to the whole subtier structure, and (3) provide consistency of methodology that would assist in the development of trends important in the monitoring of industries.

The Census Bureau submitted the proposed survey to the Office of Management and Budget (OMB) in February 1988, after conducting informal consultations with industry. The Paperwork Reduction Act of 1980, as amended, requires that agencies submit all information collection requests to OMB for review. Under the Act, OMB assesses information collection requests in terms of the burden they pose to the public. Industry representatives strongly opposed the proposed survey on the grounds that the DOD supplement was burdensome, costly to industry, and duplicative of parts of DD Form 2139. OMB, citing the Census Bureau's inadequate consultation with industry in devising the survey, did not approve it. Census withdrew the information collection request from OMB review in May 1988.

The Census submitted a revised draft of the survey to three industry associations for comment in the fall of 1988. While two of the associations found the survey burdensome, one supported it, stating that it would provide vital information, if completed accurately. Due to Army budget constraints, however, further action on the survey was halted in March 1989. A

decision on whether to resubmit the DOD supplemental survey to OMB has been postponed until 1992, when the next Shipments to Federal Government Agencies survey will be conducted.

Subcontract Report of Foreign Purchases

DOD collects data on its prime contract awards to foreign sources under its Form DD-350 system. This form, the Individual Contracting Action Report, collects information on DOD prime contract awards.

Visibility into foreign source awards at the lower tiers, however, is limited. The only existing DOD system for collecting information on foreign sourcing is DD Form 2139, but the reliability of the data collected using this form is questionable. Under certain conditions, government prime contractors and subcontractors are contractually required to submit DD Form 2139 for foreign-sourced subcontracts exceeding $25,000 awarded to their first tier subcontractors. The form was designed to determine the dollar value and extent of subcontracting from "offshore" (other than domestic) sources.

DOD officials told us that the reliability of DD Form 2139 information submitted on foreign purchases is questionable because (1) some contractors do not report their offshore subcontracts on DD Form 2139 as required by the Defense Federal Acquisition Regulation Supplement and (2) DOD internal control mechanisms are not in place; that is, DOD does not have a systematic validation mechanism to determine the level of noncompliance. DOD officials said they do little follow-up with the contractors because it would be a "monumental task." Other DOD officials said that they plan to review DD Form 2139 with the view of revising it to make it a valuable source of data on foreign sources, particularly if linked to DINET.

Program officials stated that the only use of Form 2139 data is to publish defense trade balance figures on the amount of offshore activity for the 19 countries with which the U.S. has Reciprocal Procurement MOUs. Reciprocal Procurement MOUs are bilateral agreements that provide an umbrella framework under which "buy-national" restrictions, import duties, taxes, etc. are waived by participating countries to facilitate acquisition of standardized defense equipment.

An Office of the Secretary of Defense (OSD) senior negotiator of MOUs told us that if defense trade balance data were accurate, they could be useful in monitoring the results of these MOUs, indicating the need to further investigate certain markets. For example, the balance of defense trade in favor of another country may signal that a market is closed to U.S. industries and, that further investigation may be necessary to determine why.

In our opinion, not knowing how reliable DD Form 2139 data are and not having credible data may affect DOD's ability to make informed decisions on matters relating to the defense industrial base and the extent of foreign sourcing. In our 1983 report, Defense Department Subcontract-Level Reporting System (GAO/ID-83-30), we had reservations about whether the DD Form 2139 system as planned and implemented at that time would provide the information necessary to fully (1) monitor arms cooperation agreements with friendly governments or (2) identify foreign source procurement at the subcontract level. Based on information gathered in our current review, we still have these concerns.

Joint Production Base Analysis Working Group

As part of its broader effort to review and make proposals regarding DOD's industrial base planning and production base analysis process, DOD has established the Joint Production Base

Analysis Working Group, among other things, to prepare guidelines to carry out a statutorily directed review of the capability of the defense industrial base to develop, produce, maintain, and support each major defense acquisition program. The Group plans to revise several mechanisms to collect data on production capabilities, including foreign sourcing information. This effort is in the very early stages.

NO COORDINATED SYSTEM IN PLACE TO ASSIST POLICYMAKERS TO BE AWARE OF OR GAIN ACCESS TO INDUSTRIAL BASE DATA

Several agencies are involved in attempts to coordinate information on existing data bases and models that provide visibility into the general health of the defense industrial base, and to some extent, visibility into foreign dependencies. Officials at DOD and the Federal Emergency Management Agency (FEMA) said it would be beneficial if information concerning such data bases and models were coordinated and shared among agencies to help emergency managers and policymakers in making timely and informed decisions. They stated that even though there is a "sea of data" on defense industrial base matters, there is no system in place for assisting policymakers government-wide to be aware of or gain access to the data.

Agency officials cited two efforts underway to improve coordination on defense industrial base data collection: FEMA's Executable Software System and the Department of Commerce's (DOC) Emergency Preparedness Data Base.

FEMA's Executable Software System

In 1988, FEMA developed a prototype for an automated inventory of data bases and models dealing with emergency management and the defense industrial base in the federal community. The inventory

package is called the Executable Software System. FEMA held two sessions in 1988 where agencies shared information on the data bases and models related to emergency management and industrial base matters. Based on these sessions, approximately 100 data bases were described and entered into the prototype. FEMA officials said a third meeting has been postponed, however, due to FEMA's lack of funds and recent reorganization. No implementation date has been set for the Executable Software System. According to FEMA officials, a lack of participation from other agencies has also slowed the progress of the Executable Software System. After the initial response in 1988, FEMA received less than 20 additional data base descriptions. FEMA officials estimated that less than 50 percent of the existing data bases have been identified.

DOC's Emergency Preparedness Data Base

DOC, in coordination with other federal departments and agencies, has developed a prototype for an Emergency Preparedness Data Base. This effort is in response to a National Security Council request to DOC to take a lead role in developing a plan for an industry-wide assessment of the production capabilities of defense and essential civilian sectors. The Emergency Preparedness Data Base prototype, a pilot program which currently includes data on seven critical industries, is intended to be used to assist emergency managers in determining what industrial resources are available in emergency situations. The data base, for example, could contain data to help estimate an industry's ability to survive a disaster and produce in the aftermath. Such data would include geographic locations of different industries, production equipment vulnerability and survivability, and dependence on foreign sources for raw materials and production equipment. The full development of the prototype is pending approval by an interagency committee.

Data Coordination Related to Foreign Sourcing

Although data are available on the general health of the defense industrial base, there is a lack of data regarding production at subtier levels. And, what is available is collected on an ad hoc basis. We noted some efforts to coordinate assessments of the consequences of foreign sourcing. For example, DOC's Office of Industrial Resources Administration and the Navy are working on a project to identify industrial capabilities and foreign dependencies relating to critical parts of three major Navy weapon systems. I earlier mentioned the Joint Logistics Commanders report on foreign dependency.

On request, FEMA provides other agencies with its economic analyses of foreign dependencies based on one of its economic models, the Resolution of Capacity Shortfall (ROCS) system. The ROCS system compares defense production requirements and import capacity estimates and takes into account the political viability of obtaining items from a foreign source in the event of a national security emergency. According to FEMA officials, the ROCS system addresses foreign dependencies to the extent that data are available, but due to the lack of data on subtier levels of production, it cannot directly address the consequences of foreign sourcing at these levels. According to a FEMA official, both DOD and DOC draw on the ROCS system economic analyses and FEMA has used its model to respond to congressional requests pertaining to the consequences of foreign sourcing.

AGENCY VIEWS ON SIGNIFICANT DATA-RELATED PROBLEMS

The Defense Production Act of 1950, as amended (DPA), gave the President a wide range of authorities to strengthen the mobilization base, produce military goods, control and stabilize the economy and in general mobilize the country's resources in support of a war effort. In general, DOD, DOC, and FEMA stated

that the DPA provides the President broad authority to determine what kinds of data are to be collected and to share the data or otherwise coordinate matters related to the data. However, FEMA and DOD cited what they consider significant data-related problems.

FEMA

FEMA officials said that to ensure the timely completion of their Executable Software System, a clear expression of presidential or congressional language is needed to direct agencies to cooperate with FEMA. In addition, FEMA officials stated that they need sufficient resources to implement the Executable Software System. Other agency officials, however, including the National Security Council, believe that FEMA's authority as addressed in Executive Order 12656 is sufficient to complete its automated inventory effort.

DOD

DOD stated that a "very important issue" related to the authority to collect data is the authority to mandate that persons provide the data and that it be accurate. In this regard, DOD pointed out that section 705 of the DPA authorizes the President to obtain from any person, by subpoena if necessary, information relevant to the administration of the DPA.

The President has delegated authority under section 705 to DOC's Bureau of Economic Analysis for the purpose of preparing a report required by DPA. DOD officials stated that they are not aware of any delegation of section 705 authority to DOD. Some OSD program officials stated that such a delegation of authority would assist DOD in obtaining accurate responses from contractors and subcontractors on surveys, such as the Army/Census Bureau survey.

CONSULTATION BETWEEN DOD AND DOC ON MOU NEGOTIATIONS

DOC and DOD officials stated that prior to enactment of Section 824 of the National Defense Authorization Act, Fiscal Year 1989[2], there were minimal consultations between DOD and DOC about MOUs relating to research, development, or production of defense equipment. Since enactment of this law, DOD and DOC have begun using interim consultation procedures so that DOC can provide input into DOD's industrial base impact assessments. In addition, DOD established procedures for internally coordinating its assessment of the effects of MOUs on the defense industrial base.

The interim procedures established by DOD and DOC call for the following (1) OSD provides to DOC an Industrial Base Factors Analysis and a technology security risk assessment (prepared by the DOD project officer), the proposed MOU, and the MOU program summary, (2) DOC submits to OSD its written assessment and recommendations, and (3) OSD considers the data received from DOC along with its own data and finalizes its industrial base assessment. DOD officials said that between January 6, 1989 and May 31, 1989, DOD forwarded 33 MOUs to DOC for comment and DOD received comments on 5 of the MOUs.

Although DOC officials said the interim procedures are a significant improvement over the lack of consultation before the fiscal year 1989 act was enacted, they requested modifications to the procedures. In response to DOC's concerns, DOD and DOC

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[2]This section states that in the negotiation and renegotiation of each MOU relating to research, development, or production of defense equipment, the Secretary of Defense should (1) assess the effect of the MOU on the defense industrial base and (2) regularly solicit and consider information or recommendations from DOC with respect to the effect of the MOU on the United States industrial base.

drafted a new proposal for consultation procedures on all MOUs for research, development, or production of defense equipment. The proposal, which refines and formalizes the interim consultation procedures, is being considered as the basis for an interagency agreement between DOD and DOC. The proposed procedures would (1) provide DOC full access to all OSD information relating to the MOU, (2) include DOC as an advisor in MOU negotiations, (3) establish a timeframe for DOC to provide its written industrial base assessment to OSD, and (4) require that DOD consult with DOC before initiating or concluding MOU negotiations.

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Mr. Chairman, this concludes my statement. We will be pleased to respond to any questions.

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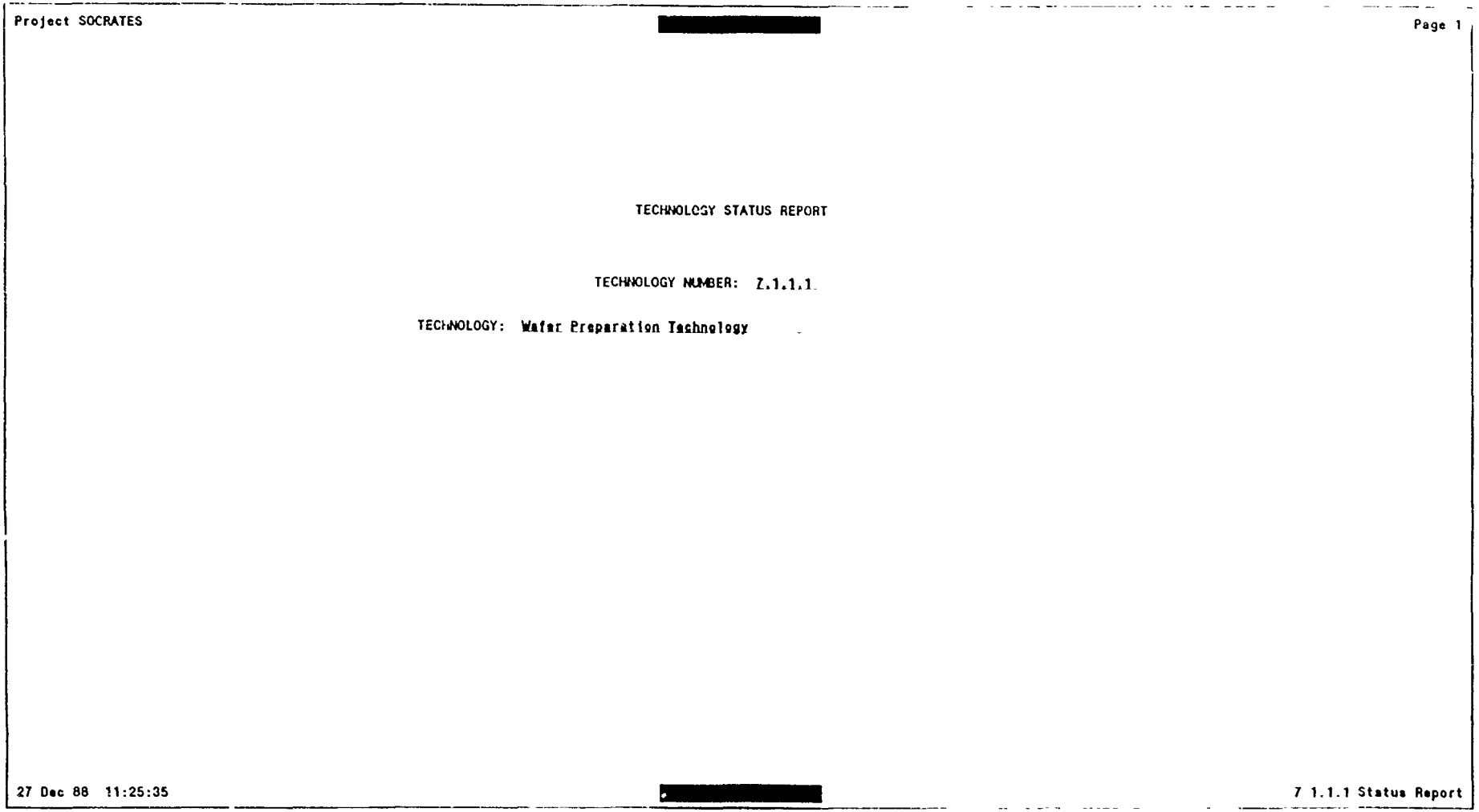


C-1

EXAMPLE OF A TECHNOLOGY STATUS REPORT (TSR)

APPENDIX C

Fictitious Data Only

Project SOCRATES [redacted] Page 2

TECHNOLOGY: 7.1.1.1 Wafer Preparation Technology

End Item Categor · Wafer Substrates

End Item	Critical Technology Element	Key Commodity	Key Parameter	Japan		U K		U S S R		France		China	
				Dev	Prod	Dev	Prod	Dev	Prod	Dev	Prod	Dev	Prod
Substrate Wafers (1 t·en 2.)													
			Maximum Orientation Accuracy	-2	1	-2	1	-4	-4	-4	-4	-3	-8
			Maxi… …ity Accuracy	-3	1	-3	1	-4	-4	-3	-3	-4	-8
			… …efect Free	2	2	2	2	1	-3	-4	-4	-3	-7
	Wafer Slicing (a. or b.)												
		Interior Diameter Saws											
			Maximum Cut Alignment Accuracy	1	1	1	1	-4	-5	-4	-4	-1	-9
			Minimum Kerf Width	1	1	1	1	-4	-5	-4	-4	-1	-9
		Wire Saws											
			Maximum Cut Alignment Accuracy	-4	-3	-6	-4	>9	>9	NC	NC	NC	NC
			Minimum Kerf Width	-4	-3	-6	-5	>9	>9	NC	NC	NC	NC
	Wafer Lapping (a.)												
		Wafer Polishers											
			Minimum Induced Stress	3	-1	3	-1	-6	-6	-4	-4	-8	-3
			Maximum Polishing Depth	4	-1	4	-1	-6	-6	-3	-3	-9	-2
Epitaxially Built Up Wafers (1. or 2. or 3.)													
			Minimum Layer Thickness	3	3	-1	-1	-2	-6	1	1	-5	-3
			Maximum Orientation Accuracy	3	3	-1	-1	-2	-6	0	1	-4	-4
			Maximum Wafer Flatness	-1	0	-1	-1	-3	-5	0	1	-3	-5
	CVD Epitaxy (a.)												

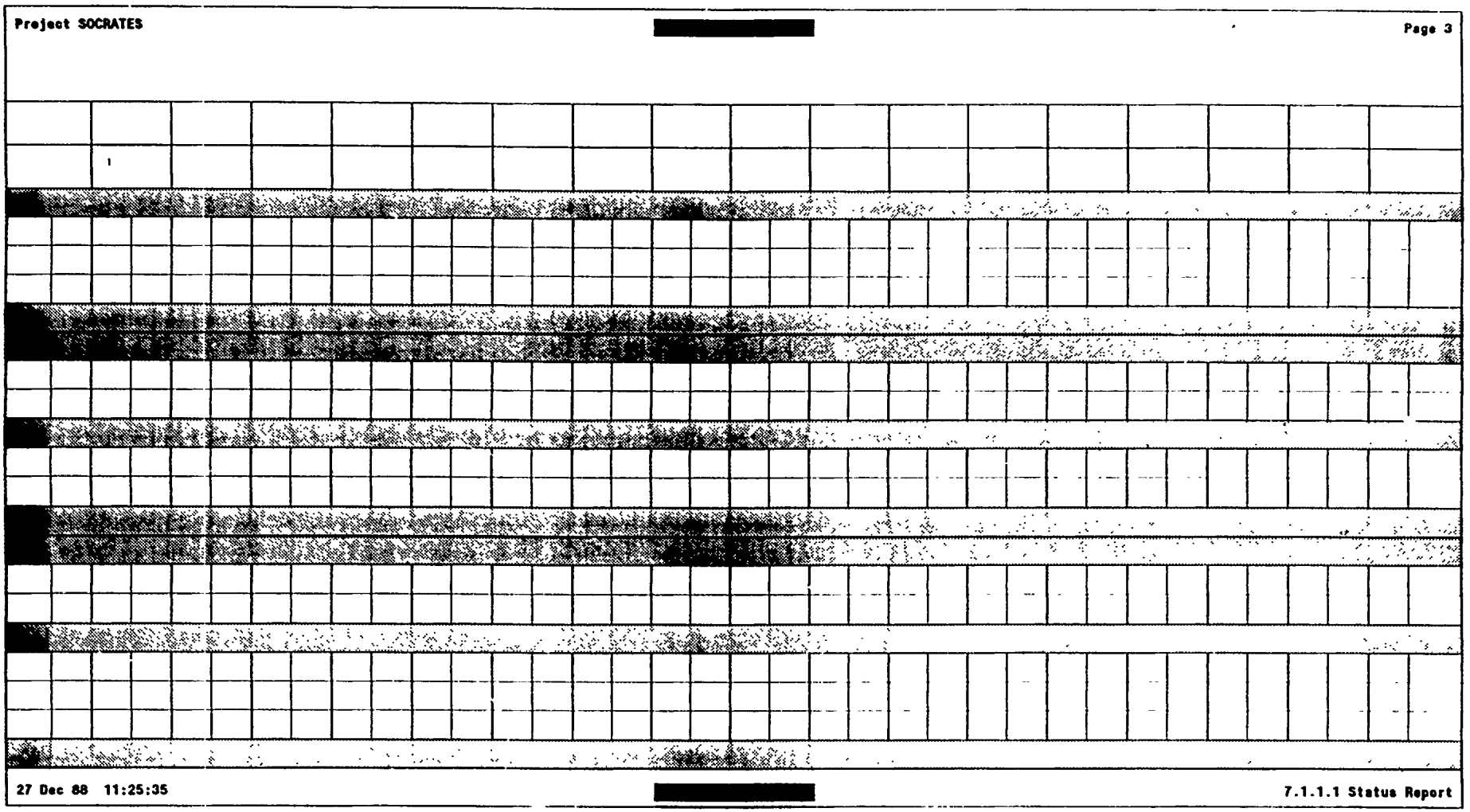
27 Dec 88 11:25:35 [redacted] 7.1.1.1 Status Report

C-2

EXAMPLE OF A TECHNOLOGY STATUS REPORT (TSR) (Continued)

APPENDIX C (Continued)

Fictitious Data Only



EXAMPLE OF A TECHNOLOGY STATUS REPORT (TSR) (Continued)

Fictitious Data Only

Project SOCRATES [redacted] Page 4

TECHNOLOGY. 7.1.1.1 Wafer Preparation Technology

End Item Category: Wafer Substrates

End Item	Critical Technology Element	Key Commodity	Key Parameter	Japan		U K		U S S R		France		China	
				Dev	Prod	Dev	Prod	Dev	Prod	Dev	Prod	Dev	Prod
Epitaxially Built Up Wafers (1. or 2. or 3.)	[redacted]												
	CVD Epitaxy (a.)												
		CVD Epitax: Reactors											
			Maximum Temperature Control	NC	NC	NC	NC	NC	NC	-2	-6	NC	NC
			Maximum Deposition Thickness Control	NC	NC	NC	NC	NC	NC	-2	-6	NC	NC
			Maximum Number Of Deposition Cycles	NC	NC	NC	NC	NC	NC	-3	-7	NC	NC
	Molecular Beam Epitaxy (a)												
		MBE Machines											
			Maximum Beam Precision	NC	NC	-4	-3	-2	-8	NC	NC	-2	-1
			Maximum Control Of Evaporants	NC	NC	-3	-4	-2	-8	NC	NC	-2	-1
	Liquid Phase Epitaxy (a)												
		Liquid Phase Epitaxy Reactors											
			Maximum Deposition Precision	3	2	1	0	-5	-6	-3	-2	-8	NC
			Maximum Number Of Gates	4	2	1	0	-4	-6	-3	-2	-8	NC

27 Dec 86 11:25:35 [redacted] 7.1.1.1 Status Report

C-4

EXAMPLE OF A TECHNOLOGY STATUS REPORT (TSR) (Continued)

APPENDIX C (Continued)

Fictitious Data Only

TECHNOLOGY ASSESSMENT REPORT

TECHNOLOGY NUMBER: 7.1.1.1

TECHNOLOGY: Wafer Preparation Technology

Country Name: Japan

Country Category: CoCom

Date of Assessment: 13 March 1988

Analyst's Name: Branson

Organization. DIA

Telephone Number:

D-1

EXAMPLE OF A TECHNOLOGY ASSESSMENT REPORT (TAR)

APPENDIX D

Fictitious Data Only

Project SOCRATES [redacted] Page 2

TECHNOLOGY: 7.1.1.1 Wafer Preparation Technology

End Item Category: Wafer Substrates

End Item	Critical Technology Element	Key Commodity	Key Parameter	Technology Assessment Years Ahead/Behind U.S Development	Production	Utilization
Substrate Wafers (1. then 2.)						
			Maximum Orientation Accuracy	-2	1	NA
			Maximum Resistivity Accuracy	-3	1	NA
			Maximum Percent Defect Free	2	2	NA
	Wafer Slicing (a or b)					
		Interior Diameter Saws				
			Maximum Cut Alignment Accuracy	1	1	0
			Minimum Kerf Width	1	1	0
		Wire Saws				
			Maximum Cut Alignment Accuracy	-4	-3	-2
			Minimum Kerf Width	-4	-3	-2
	Wafer Lapping (a.)					
		Wafer Polishers				
			Minimum Induced Stress	3	-1	0
			Maximum Polishing Depth	4	-1	0
Epitaxially Built Up Wafers (. or 2. or 3.)						
			Minimum Layer Thickness	3	3	NA
			Maximum Orientation Accuracy	3	3	NA
			Maximum Wafer Flatness	-	0	NA

27 Dec 88 11:25 35 [redacted] Japan - 7.1.1.1

D-2

EXAMPLE OF A TECHNOLOGY ASSESSMENT REPORT (TAR) (Continued)

Fictitious Data Only

Project SOCRATES [redacted] Page 3

Japan CoCom

Foreign Capability Development			Foreign Capability Production							
Item Descriptor	Organization/Company	Parameter Units	Item Descriptor	Organization/Company	Parameter Units	Quantity	Prod Rate	Rel/Serlif	K C. CCL	K C. MCTL
EX-100	Hitachi	+/- 2%	GD-200	Hitachi	+/- 4%	2,000	4,000/Mo	NA		
EX-100	Hitachi	+/- 1%	LM-29	Hitachi	+/- 3%	1,000	1,000/Mo	NA		
54-LM	A Mashiro	0.2 %	LM-29	Toshiba	2 %	1,000	1,000/Mo	NA		
1000-W	Furukawa	+/- 5%	ANP-10	Furkawa	+/- 10%	50	20/Mo	1y/10y		
1000-W	Furukawa	5 mm	123-W-4	NTT	20 mm	100	50/Mo	NA		
EX-WS-50	Tokyo Institute of Technology	+/- 4%	WS-100	Nippon Steel	+/- 10%		100/Mo	1y/10y		
EX-WS-40	Tokyo Institute of Technology	3 mm	WS-100	Nippon Steel	12 mm		100/Mo	1y/10y		
XC-W-1	Aoyama Gukvin University	2 exp -2 lb/sq in	WP-560A	Toshiba	9 exp -2 lb/sq in	50	25/Mo			
XC-W-1	Aoyoma Gukvin University	8 microns	WP-560A	Toshiba	2 microns	50	25/Mo			
EBW-200	A&M Japan	12 Microns	8-LM	Mitsubishi	20 Microns	5000 Wafer	5000/Mo	NA		
MAG-90	University of Tokyo	+/- 1%	XP-100	Hitachi	+/- 12%	6000	4000/Mo	NA		
EXP-111	A Mashiro	+/- 10 Angstroms	XP-100	Hitachi	+/- 50 Angstroms	6 Wafers	4000/Mo	NA		

27 Dec 88 11:25.35 [redacted] Japan - 7.1.1 1

EXAMPLE OF A TECHNOLOGY ASSESSMENT REPORT (TAR) (Continued)

Fictitious Data Only

Project SOCRATES [redacted] Page 4

TECHNOLOGY: 7.1.1.1 Wafer Preparation Technology

End Item Category: Wafer Substrates

End Item	Critical Technology Element	Key Commodity	Key Parameter	Technology Assessment Years Ahead/Behind U.S. Development	Production	Utilization
Epitaxially Built Up Wafers (1. or 2. or 3.)	[redacted]					
	CVD Epitaxy (a.)					
		CVD Epitaxy Reactors				
			Maximum Temperature Control	NC	NC	NC
			Maximum Deposition Thickness Control	NC	NC	NC
			Maximum Number Of Deposition Cycles	NC	NC	NC
	Molecular Beam Epitaxy (a.)					
		MBE Machines				
			Maximum Beam Precision	NC	NC	NC
			Maximum Control Of Evaporants	NC	NC	NC
	Liquid Phase Epitaxy (a.)					
		Liquid Phase Epitaxy Reactors				
			Maximum Deposition Precision	3	2	2
			Maximum Number Of Gates	4	2	4

27 Dec 88 11:25:35 [redacted] Japan - 7.1.1.1

D-4

EXAMPLE OF A TECHNOLOGY ASSESSMENT REPORT (TAR) (Continued)

APPENDIX D (Continued)

Fictitious Data Only

Project SOCRATES [redacted] Page 5

Japan CoCom

Foreign Capability Development			Foreign Capability Production							
Item Descriptor	Organization/Company	Parameter Units	Item Descriptor	Organization/Company	Parameter Units	Quantity	Prod Rate	Rel/Serlif	K.C. CCL	K.C. MCTL
[redacted]										
NC	NC	NC	NC	NC	NC	NC	NC	NC		
NC										
NC	NC	NC	NC	NC	NC	NC	NC	NC		
NC	NC	NC	NC	NC	NC	NC	NC	NC		
[redacted]										
NC	NC	NC	NC	NC	NC	NC	NC	NC		
NC	NC	NC	NC	NC	NC	NC	NC	NC		
[redacted]										
LPER-2	Toshiba	+/- 6 Microns	LR-W-2	Mitsubishi	+/- 25 Microns	25	25/Year	2y/10y		
LPER-1	Toshiba	10 Gates	LR-W-2	Mitsubishi	2 Gatec	25	25/Year	2y/10y		

27 Dec 88 11:25:35 [redacted] Japan - 1.1.1.1

D-5

EXAMPLE OF A TECHNOLOGY ASSESSMENT REPORT (TAR) (Continued)

APPENDIX D (Continued)

APPENDIX E

EXAMPLE OF SOCRATES PRODUCT DISTRIBUTION

DISTRIBUTION LIST

F531140/JA,UK,IT,WV,WW,WX,GE

DOD AND JOINT AGENCIES		
A015	10	ASD R&DT/DARPA
A095	1	JDSSC
A102	4	OUSDP
A121	1	ECAC
A151	4	OUSDREDUSD (IP&T)
A152	1	OUSD(A)/OD PI-SP
A153	3	OSD/USDA/C3I
A352	1	DTESA
DIA		
B004	1	DIA/DI-1
B033	1	DIA/DI-3
B054	1	DIA/DT-4A
B055	1	DIA/DT-4B
B068	1	DIA/DT-4C
B136	1	DIA/DE-2
B150	1	DIA/DT
B158	1	DIA/DT-1
B163	1	DIA/DT-5B
B170	1	DIA/DT-5B2
B172	50	DIA/DT-5B3
B351	1	DIA/RTS-3A4
B352	50	DIA/RTS-2F5 STOCK
B378	1	DIA/DB-4G4
B537	1	DIA/DB-TPO
B545	1	DIA/VP
B551	1	DIA/DB-SPO/P
B552	36	DIA/DI-6B
B571	1	DIA/DB-4G1
B597	1	DIA/DB-1G1
B604	1	DIA/DB-1G2
B737	2	DIA/RTS-2B (LIB)
B744	1	DIA/DX-7A
B820	1	DIA/DIA REP JEWC
B824	1	DIA/DIA REP SAC

ARMY		
C090	1	USAEPG-BEEO
C309	1	500TH MIG
C395	1	INSCOM-SAA
C512	1	ARMY MATERIEL CMD
C521	1	ELECTRONIC PG
C523	1	LABCOM
C525	1	CSW
C550	1	CECOM
C620	1	SRD
C697	1	TEST & EVAL COMD
C766	1	HQDA DAMI-FIC
C768	3	ITAC (LIBRARY)
C842	1	ITAC-ID-ELEC BR
U.S. NAVY		
D159	1	NAVAIRDEVCEN
D220	1	ONR
D248	1	NAVSEASYSCOM
D249	1	NAVPGSCOL
D263	1	NOSC
D505	1	COMNAVSECGRU
D971	1	ONI/OP-092
U.S. AIRFORCE		
E018	1	USAF/INA (RAND-C)
E303	1	HQ AFIS/INKL
E425	1	WR AIRLOG CTR/MMR2
E436	1	AFEWC/ESRI
E550	1	HQ ELEC SEC (STRAT)
E706	1	HQ ESC/INAM
UNIFIED AND SPECIFIED COMMANDS		
G005	3	HQ AFSPACECOM/INXS

H005	1	USCINCEUR
H006	1	EUCOM JIC
H300	1	ODCS IN(USAREUR)
H704	1	USAFE/INO
I005	1	USCINCCENT
K300	1	IPAC (LIBRARY)
K313	1	IPAC (CODE IA)
K645	1	FOSIF WESTPAC
L049	1	544 IAS/IAOC
OTHERS		
P002.	2	NPIC/IB
P019	1	NPIC/IEG/TED/LAB
P055	25	CIA/OIR/DSD/DB
P077	2	STATE INR/NESA
P079	1	STATE INR/PMA
P080	2	STATE INR/RWE
P081	2	STATE INR/EC
P082	2	STATE EA&PAC AFF
P083	2	STATE INTER-AM AFF
P090	10	NSA/T515/CDB
P100	1	NAT SEC COUNCIL
P109	5	PFIAB
P705	1	DIA/DI-3(SSCI)
P706	1	DIA/DI-3(HPSCI)
Q008	1	NTIC
Q420	4	FTD/SIIS
Q591	3	FSTC-AIFIC
R025	25	COMMERCE
R085	1	NASA
S001	1	LANL
S003	1	SANDIA LABS
S013	1	LLL

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DISTRIBUTION LIST (MICROFICHE)

DOD AND JOINT AGENCIES		
A096	4	NEACP
DIA		
B331	1	DIA/RTS-2A2
B352	25	DIA/RTS-2F5 STOCK
ARMY		
C768	1	ITAC (LIBRARY)
C772	1	HQDA DAMI-FIO
U.S. NAVY		
D153	1	PACMISTESTCEN
D700	1	CGMCCDC
U.S. AIRFORCE		
E706	1	HQ ESC/INAM
UNIFIED AND SPECIFIED COMMANDS		
K300	1	IPAC (LIBRARY)
OTHERS		
P002	1	NPIC/IB
Q420	2	FTD/SIIS
Q591	1	FSTC-AIFIC

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APPENDIX F

DINET MISSION ELEMENT NEED STATEMENT

Memorandum for Comptroller from The Under Secretary of Defense, Subject: The Defense Industrial Network (DINET), dated 9 December 1988.

THE UNDER SECRETARY OF DEFENSE

WASHINGTON, DC 20301

ACQUISITION

9 DEC 1988

(I/IP)

MEMORANDUM FOR COMPTROLLER

SUBJECT: The Defense Industrial Network (DINET)

In order to assure that our industrial base is able to support priority Department of Defense (DoD) programs in a competitive international environment, we need improved information resources on U.S. manufacturing capabilities. Of particular concern is the growing reliance on single, sole and foreign sources of supply. An information system is needed that improves our visibility into the U.S. production base for critical weapon system components and subcomponents.

I am sponsoring the DINET to help DoD address industrial base concerns dealing with products, suppliers, technologies or weapon systems, as well as support crisis management actions regarding surge and mobilization. Forwarded for your consideration is a copy of the Mission Element Needs Statement and implementation strategy. Please process it through the OSD System Review Council as soon as possible.

Attachment

This is a key start to sort out/ identify critical information on the industrial base

9 DEC 1988

MISSION ELEMENT NEEDS STATEMENT
FOR THE DEFENSE INDUSTRIAL NETWORK

I. Mission and Identification

A. Mission Area Identification

The Under Secretary of Defense for Acquisition serves the Secretary of Defense as the person primarily responsible for: industrial preparedness planning, production management planning, and acquisition and logistics management for defense weapons systems. Under the authority vested in the Under Secretary of Defense for Acquisition by DoD Directive 5134.1, he will become the sponsor for an integrated industrial base information management system, the need for which is described in detail in this Mission Element Needs Statement.

The mission to be performed by the system is to provide improved visibility into the U.S. production base for critical weapon system components and subcomponents. Visibility of this type is needed to produce ongoing assessments of U.S. manufacturer's ability to support priority DoD programs. The second most important mission this system will perform is to provide access within minutes to industrial planning and capabilities data needed to support crisis management operations in emergency situations. The third mission in order of relative importance is to provide coordinated, accurate data for budgeting and programming, industrial preparedness measures, and other funding mechanisms designed to increase the overall responsiveness and sustainability of the production base. Other mission areas the system will serve include: the preparation of special reports for Congress or DoD policy makers; project development planning and evaluation; and measuring trade-offs between war reserves and production capability. All these mission areas serve the overall mission of the Under Secretary of Defense (Acquisition).

B. Current Organizational and Operational Elements:

In July 1988, the Under Secretary of Defense (Acquisition) forwarded a report to the Secretary of Defense entitled, Bolstering Defense Industrial Competitiveness. This report outlines the results of an extensive examination of problems facing the U.S. defense manufacturing base and highlighted the lack of comprehensive industrial information. The current dynamics of industry worldwide provided the basis for recommending a strategy to deal with six industrial elements critical to national security. They are: forging the right relations between DoD and industry; improving the acquisition systems; establishing defense industrial options that support our military strategic plans; developing manufacturing capabilities concurrent with development of weapon systems; laying the foundation now for the technical skill base required for tomorrow's defense needs; and ensuring that industrial base issues important to our defense benefit from the full spectrum of potential policy remedies. To

industrial base information are impaired because data entitles have varying formats, lack of standards and differing definitions. This slows down response time and frustrates efforts to coordinate responses to internal and external queries from policy-making organizations. As a result, the OSD cannot properly fulfill its mission to assure the maintenance of adequate industrial capabilities to meet peacetime and emergency military needs.

B. Mission Outcomes to be Achieved:

1) Storage, retrieval, and analysis of data to make quick decisions to thwart possible terrorist activity, support impending crises, and enhance warfighting potential during the advance preparation stages of war.

2) Storage and retrieval of data to aggregate and analyze specific industrial facility capacity and capacity expansion information within a matter of minutes.

3) Storage and retrieval of information to prepare internal DoD Production Base Analyses (PBA's).

4) Storage and manipulation of information on economic trends within military-sensitive U.S. industrial sectors.

5) Storage and manipulation of major weapon system requirements information in conjunction with various emergency scenarios.

6) Storage and retrieval of information on potential alternative military suppliers.

7) Storage and retrieval of information on possible substitution among critical components of weapons systems.

8) Retrieval of information which applies to preparedness considerations within development and acquisition functions, such as DAB, DRB, PPBS.

9) Information that will clearly identify DoD interests in a responsive manufacturing base.

10) An information system with appropriate analytical models that will improve the visibility of critical subtier industries supporting defense programs.

III. Existing and Programmed DoD Capabilities

A. Existing Capabilities

Current capabilities to easily access critical industrial base data on a multi-component basis do not exist. Sources of industrial capacity and foreign dependency data at the plant level are either non-existent, or fragmented among many sources of questionable reliability. No effort has been made to improve and coordinate overall DoD industrial capabilities information at the micro-analytical level. Data collection and storage are carried out by many separate entities within each major DoD component. There has also been no attempt to organize lists of critical components and subcomponents by major military end item or system.

Likewise, there currently is not a way to link data on production capabilities for critical items with industrial subsector trend data. Such information would allow us to forecast possible problem sectors for the DoD due to import penetration or business failure.

B. Impact on Operations of Maintaining Status Quo:

Maintaining the status quo would have serious consequences for current operations within DoD. It is likely that cost-inefficient duplication of effort to produce individual automated databases within separate service organizations will occur. In some instances separate database are needed; but in others the motivation to build them might be to satisfy a requirement that a central data base could satisfy better.

It is also likely that additional manpower would be required to search for and retrieve data for planning, supporting readiness exercises, and answering inquires if the status quo were retained. Along with the manpower demands, space and time demands for assessing industrial base information are likely to multiply as U.S. industrial base problems proliferate.

Failure to develop DINET could expose DoD to greater risks including the catastrophic loss of one or more suppliers, directly affecting the mission readiness of U.S. forces. Also, because of an incomplete picture of our manufacturing surge posture OJCS operations plans may be based on erroneous assumptions.

IV. Constraints

A. Operational and Logistical Limitations, Organizational, or Special Consideration:

1. The system must have an ability to limit access due to the sensitive business nature of the data it is to contain.

2. A small portion of the system must be DoD-classified.
3. The system must be user-friendly.
4. The system must function in times of emergency, including surge and mobilization.

B. Intra-Service Standardization Requirements:

1. Organization, item, producer, and industry codes must be standardized among the Services, DLA and OSD.
2. Formatting of system data must be standardized among the Services, DLA and OSD.

C. Intra-Service Interface Requirements:

1. Files of Service modules must interface with system.
2. System must be capable of integrating data from non-homogeneous systems.

D. Limits of Investments That Should Be Placed On It:

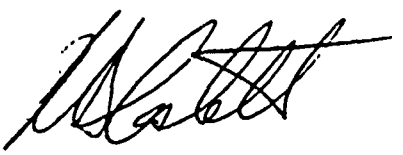
A detailed DINET implementation strategy has been developed. A fully operational system is estimated to cost $29 million.

E. Limits on Recurring Costs:

Cannot be determined at this time.

F. Timing of Need:

An urgent need exists to determine current industrial base capabilities to support timely acquisition of military material in peacetime and wartime. Current information systems are inadequate. The need for such data is growing at such a rate that current piecemeal efforts to collect, store, and manage the data are unacceptable. A central data base of core industrial information must be developed within as short a time period as possible.



APPENDIX G

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APPENDIX H

DEFINITIONS

DINET - The Defense Industrial Network. A product-specific industrial base capability industrial base capability assessment system that brings together a broad spectrum of information, including acquisition, trade, foreign, direct investment, current economic trends, critical military technology, industrial capability and military requirements data.

Industrial Base - That part of the total industrial production, repair, and maintenance capability in the United States and Canada, both private and government, which supports, directly or indirectly, DOD activities.

SOCRATES - A foreign technology capability assessment system designed to analyze and track technological capabilities of all technologically significant countries worldwide in various technical areas and to compare these capabilities against a baseline U.S. capability.

Technology Outline - A presentation of the state-of-the-art performance parameters of a technology. It focuses on the critical components (end items, key commodities, and key parameters). Manufacturing and technical alternatives within the technology are also identified. Each country with potentially significant capabilities are quantified in terms established in this outline.

Technology Strategic Planning	- The use of global technology resources to achieve specific objectives, thereby, increasing U.S. competitiveness against economic and/or geo-political rivals. It provides the basis for making informed decisions on those entities (nations, corporations, and organizations) most appropriate to target for cooperation with the U.S. in the development and/or production of key technologies (joint ventures, codevelopment, coproduction, etc.). The goal of such cooperation is enhancement of the U.S. technology base.

APPENDIX I

ABBREVIATIONS AND ACRONYMS

AQS - Analyst Query System

CAGE - Contractor and Government Entity

CSP - Counterintelligence and Security Policy

DCASR - Defense Contract Administration Service Region

DINET - Defense Industrial Network

DIA - Defense Intelligence Agency

DLA - Defense Logistics Agency

DOD - Department of Defense

DUTYPIIN - Duty Free Entry Data

DUNS - Data Universal Numbering System

EDS - Executive Display System

FAR - Federal Acquisition Regulation

FDI - Foreign Direct Investment

FIPS - Federal Information Processing Standard File

FORDTIS - Foreign Disclosure and Technical Information System

FSC - Federal Supply Classification

HDTV - High Definition Television

HUSC - Human Intelligence Scientific and Technical Collection Program

INDATA - Industrial Data Loan Program

LABIC - Laboratory Research-to-Intelligence Analyst Cooperative

MENS - Mission Element Needs Statement

MCTL - Military Critical Technologies List

MCRL - Master Cross Reference List

NADIBO - North American Defense Industrial Base Organization

NIISS	- National Industrial Information Support to SOCRATES
PC	- Personal Computer
PEPROC	- Planned Emergency Producer
OIBA	- Office of Industrial Base Assessment
ODUS(P)	- Office of the Deputy Under Secretary for Policy
QCAL	- Qualified Contractor Emergency Procedures
QUADS	- Quality Assurance ...
RPEP	- Register of Planned Emergency Procedures
R&D	- Research and Development
SIC	- Standard Industrial Classification
SOSIC	- SOCRATES Open Source Information Center
SPEX	- SOCRATES Patent Exploitation Program
TSP	- Technology Strategic Planning
TAR	- Technology Assessment Report
TSR	- Technology Status Report